



Purchasing Office - Bureau des achats:

Systems Software Procurement Division /
Division des achats des logiciels d'exploitation
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CONTRACT - CONTRAT

Your proposal is accepted to sell to Her Majesty the Queen
in right of Canada, in accordance with the terms and conditions
set out herein, referred to herein or attached hereto, the goods,
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Nous acceptons votre proposition de vendre à Sa Majesté
la Reine du chef du Canada, aux conditions énoncées ou
incluses par référence dans les présentes, et aux annexes
ci-jointes, les biens, services et construction énumérés dans
les présentes, et sur toute feuille ci-annexée, au(x) prix indiqué(s).

Comments - Commentaires

Vendor/Firm Name and Address

**Raison sociale et adresse du
fournisseur/de l'entrepreneur**

756395497PG0001
Element AI Inc.
6650 Saint-Urbain
Suite 500
Montreal
Quebec
H2S3G9
Canada

Title - Sujet Automated GEOSCAN Mineral Mapping	
Contract No. - N° du contrat 23240-200239/001/EE	Date 2020-01-27
Client Reference No. - N° de référence du client 23240-200239	
Requisition No. - N° de la demande 23240-200239	
File No. - N° de dossier 017ee.23240-200239	CCC No./N° CCC - FMS No./N° VME
Financial Code(s) Code(s) financier(s) 0410 - 2001 - NAF1 - 51232 -340311	
GST/HST TPS/TVH <input type="checkbox"/>	
F.O.B. - F.A.B. Destination	
GST/HST - TPS/TVH Included - Inclus	Duty - Droits Included - Inclus
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: DEPARTMENT OF NATURAL RESOURCES Geological Survey of Canada 601 BOOTH ST OTTAWA Ontario K1A0E8 Canada	
Invoices - Original and two copies to be sent to: Factures - Envoyer l'original et deux copies à: Specified Herein Précisé dans les présentes	
Address Enquiries to: - Adresser toutes questions à: Lessard, Peter	Buyer Id - Id de l'acheteur 017ee
Telephone No. - N° de téléphone (613) 850-7602 ()	FAX No. - N° de FAX () -
Total Estimated Cost - Coût total estimatif \$98,131.46	Currency Type - Devise CAD
For the Minister - Pour le Ministre Lessard, Peter <small>Digitally signed by: Lessard, Peter DN: CN = Lessard, Peter C = CA O = GC OU = PWGSC-TPSGC Date: 2020.01.27 13:56:25 -05'00'</small>	

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Public Works and Government Services Canada

Travaux publics et Services gouvernementaux Canada

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ANNEX "B"

Statement of Work

SW.1.0 TITLE

Automated GEOSCAN document classification in support of the Canada mineral potential mapping project

SW.2.0 BACKGROUND

All of the science publications that the Geological Survey of Canada (GSC) at Natural Resources Canada (NRCan) produces is included within the open and freely available GEOSCAN database. At present, GEOSCAN includes approximately 80,000 entries in XML format with publication dates ranging from 1847 to present. Each publication entry within the database includes metadata fields such as title, subjects (or keywords), abstract, plain language summary, and location information (i.e., latitude, longitude, National Topographic System grid). Because a large proportion of research programs are focused on Canada's natural resources, the GEOSCAN publication database represents an important repository for information regarding Canadian base, precious, and critical metal deposits (i.e., "ore systems"). Periodic, review-type scientific articles represent the traditional approach for consolidating the knowledge gained from ore system research. As part of the current SOW, we seek to develop new tools for interrogating this publication database using the latest advances in artificial intelligence (AI).

SW.3.0 OBJECTIVES

NRCan seeks to use AI techniques to identify GEOSCAN entries relating to a particular ore system and extract the spatial coordinates of the best matches. A set of entries known to be related to the targeted ore system will be provided by NRCan as the training data.

Mandatory Stage 1

The specific requirements of the SOW include:

- (1) Identify text patterns related to one targeted ore system using publication metadata within GEOSCAN;
- (2) Build predictive model to rank all GEOSCAN entries according to their degree of fit with the text patterns identified through the metadata. The predictive model will be based on the NRCan selected training set. Model accuracy and precision must be in the range of 70–100% based on cross-validation with the NRCan selected training set and manual validation with a smaller subset of GEOSCAN entries by NRCan;
- (3) Extract the identifying information, spatial coordinates, and degree of fit (i.e., predictive model confidence score) as an electronic data table (e.g., comma separated value file) for all GEOSCAN entries. The spatial coordinates will be used by NRCan to define areas of higher mineral potential for the targeted ore system.

Optional Stage 2

Build and deliver an open-source and automated digital solution that could be reconfigured and/or modified (e.g., by selecting a new training set) by NRCan to train and apply predictive models for other ore systems in the future. This automated solution is required to:

- 1) Must work with GEOSCAN metadata in its original format so that new entries into the publication database can be included in a continually updating predictive model;
- 2) Must allow predictive model developed during Mandatory Stage 1 to be trained on a new training set by NRCan;

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- 3) Must be able to be used and maintained by NRCan.

Optional Stage 3

Many GEOSCAN entries correspond to scientific reports and/or maps in PDF format. A third optional stage of the SOW would be to apply the predictive model(s) developed during Stage 1 to search through the original scientific documents rather than only using the metadata hosted in GEOSCAN. The spatial coordinates of the best matches could then be extracted using the associated GEOSCAN metadata. Where appropriate, a subset of publications in PDF format could be provided by NRCan for the optional Stage 3 of this SOW. The automated digital solution delivered as part of Optional Stage 2 is not required to search through PDF documents.

SW.4.0 PROJECT REQUIREMENTS

SW.4.1 Tasks, Deliverables, Milestones and Schedule

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Contractor Tasks/Activities	Contractor Deliverables/Milestones	Contractor Time Schedule	NRCan Roles
Stage 1 Introduction: (1) Data provided to Contractor in XML format.	(1) Data is transferred by NRCan and received by Contractor; (2) Stage 1 project launch meeting between NRCan and Contractor within five (5) business days after contract award.	Based on bidder proposal up; final project results and reporting deadline is March 31 2020.	(1) NRCan will deliver GEOSCAN data in XML format
Stage 1 Data Exploration: (1) Data is ingested, converted, normalized and managed in a consistent data structure by Contractor.	(1) Data structure is now compatible with machine learning methods used by Contractor.	Based on bidder proposal up; final project results and reporting deadline is March 31 2020.	
Stage 1 Model Design: (1) Contractor trains, tunes and optimizes a predictive machine learning model that recognizes keywords and word associations related to the targeted ore system.	(1) Contractor has defined word associations related to the targeted ore system; (2) Contractor has designed predictive model capable of recognizing text patterns related to the targeted ore system using GEOSCAN metadata fields (Title, Subjects, Abstract, Plain Language Summary); (3) Progress update meeting between NRCan and Contractor after building the Stage 1 predictive model within five (5) business days of model completion.	Based on bidder proposal up; final project results and reporting deadline is March 31 2020.	(1) NRCan will provide targeted ore system; (2) NRCAN personnel to support Contractor on text relationship identification; (3) NRCAN domain experts to support Contractor on training, tuning and testing the extractive models.
Stage 1 Data Extraction: (1) Contractor uses predictive model to identify matches within the GEOSCAN publication database; (2) Contractor ranks publication metadata according to their degree of fit with predictive model results; (3) Contractor extracts identifying information, spatial coordinates (i.e., using the Latitude, Longitude, and NTS fields) from GEOSCAN metadata and matching score (i.e., predictive model confidence score).	(1) Contractor has prepared electronic data table (e.g., comma separated value format, csv) containing GEOSCAN ID, latitude, longitude, NTS, and predictive model results for all GEOSCAN entries.	Based on bidder proposal up; final project results and reporting deadline is March 31 2020.	(1) NRCAN personnel to support Contractor on data extraction with domain expertise.

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Stage 1 Validation and Acceptance: (1) Contractor conducts validation (i.e., accuracy) and sensitivity analysis of text patterns to predictive model results.	(1) Predictive model accuracy and precision must be in the range of 70–100% based on multiple cross-validation with training set; (2) Contractor provides qualitative and/or quantitative assessment of the sensitivity of predictive modelling results to keyword selection.	Based on bidder proposal up; final project results and reporting deadline is March 31 2020.	(1) NRCAN domain experts to validate and accept extractive models.
Stage 1 Reporting: (1) Contractor analyses results, prepares digital solution and next steps.	(1) Written report that summarizes predictive modelling method and results within five (5) business days after model acceptance; (2) Oral presentation that summarizes results and next steps within five (5) business days after model acceptance; (3) Electronic data table containing: GEOSCAN ID, latitude, longitude, NTS grid, and predictive model results for all entries.	March 31 2020	(1) NRCAN availability for oral presentation
Optional Stage 2 (1) Contractor develops automated digital solution for training and applying predictive models using GEOSCAN metadata to other ore systems.	(1) Contractor delivers digital solution that enables NRCAN staff to train and build predictive models for targeting other ore systems using GEOSCAN metadata.	October 31 2020	
Optional Stage 3 (1) Contractor applies predictive text model developed in Mandatory Stage 1 to the original scientific reports and maps in PDF format (rather than only using metadata).	(1) Contractor delivers electronic data table (e.g., comma separated value format, csv) containing GEOSCAN ID, latitude, longitude, NTS, and predictive model results for all entries.	March 31 2021	(1) NRCAN provides subset of scientific reports and maps in PDF format

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SW.4.2 Deliverables time table

NRCAN GEOSCAN PREDICTIVE MODEL PROJECT KEY PROJECT MILESTONES

Milestones Description	Status
STAGE I – Build Predictive Model	
Project Kick-off Meeting	February 3, 2020
Delivery of Predictive Model Report	March 31, 2020
STAGE II – Build and Deliver Digital Solution (predictive model)	
Project Kick-off Meeting	
Delivery of Production Ready Digital Solution	October 31, 2020
STAGE III – Expand Predictive Modeling to include additional Data	
Project Kick-off Meeting	
Deliver Updated Predictive Model	March 31, 2021

SW.4.3 Reporting Requirements

Contractor must provide one written report, one oral presentation, and one electronic data table with project results by the end of each phase. The contractor shall also agree to at least one initial meeting for the Stage 1 project launch, one progress update meeting after building the Stage 1 predictive model (see section SW.4.1) and a final meeting to discuss project wrap-up at the end of all completed stages of the initial work; and the next steps.

SW.4.4 Acceptance Procedures

All deliverables and services rendered under the contract are subject to inspection by the Project Authority. Review and feedback will be provided in writing by the Project Authority within the ten (10) business days. The Project Authority shall have the right to reject any deliverables that are not considered satisfactory, or require their correction before payment will be authorized.

SW.4.5 Specifications and Standards

The accuracy and precision of the predictive model must be in the range of 70–100% based on cross-validation with the NRCan-selected training set (e.g., K-fold, Monte Carlo). A random sample (1–5%) of GEOSCAN entries will also be validated manually by NRCan to further assess the accuracy of the predictive model.

SW.4.6 Technical, Operational and Organizational Environment

All work will be completed at the Contractor's place of business.

SW.5.0 OBLIGATIONS

SW.5.1 Contractor's Obligations

In addition to the obligations outlined in section 4 of this SOW, the Contractor shall:

1. Keep and maintain all documents and proprietary information confidential;
2. Submit all written reports in hard copy and electronic Microsoft Office Word format;
3. Attend meeting with stakeholders, if necessary;

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4. Participate in teleconferences, as needed;
 5. Maintain all documentation in a secure area.

SW.5.2 NRCan's Obligations

1. Deliver GEOSCAN publication database (XML format);
2. Provide access to staff member(s) on a weekly basis to coordinate activities and support text relationship identification, predictive modelling and validation of results;
3. Provide comments, or accept, draft reports within ten (10) business days.

SW.5.3 Estimated Period of the Contract

The estimated period of the contract is from the date of Contract Award to *April 30, 2020*.

SW.5.4 Location of Work, Work Site and Delivery Point

All work will be completed at the Contractor's place of business. Travel and living expenses incurred by the Contractor will not be paid.

**Pages 25 to / à 102
are not relevant
sont non pertinentes**



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K1A 0S5

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Nous acceptons votre proposition de vendre à Sa Majesté la Reine du chef du Canada, aux conditions énoncées ou incluses par référence dans les présentes, et aux annexes ci-jointes, les biens, services et construction énumérés dans les présentes, et sur toute feuille ci-annexée, au(x) prix indiqué(s).

Comments - Commentaires

Vendor/Firm Name and Address

Raison sociale et adresse du fournisseur/de l'entrepreneur

122363153PG0002
KPMG LLP
150 Elgin Street
Suite 1800
Ottawa
Ontario
K2P2P8
Canada

Title - Sujet AI Based Services - REP - Stage 1	
Contract No. - N° du contrat 0X001-182587/001/EE	Date 2019-07-26
Client Reference No. - N° de référence du client 0X001-182587	
Requisition No. - N° de la demande 0X001-182587	
File No. - N° de dossier 017ee.0X001-182587	CCC No./N° CCC - FMS No./N° VME
Financial Code(s) Code(s) financier(s) 0520-C10-1K40-54701-C66110-IOCS122	
GST/HST TPS/TVH <input type="checkbox"/>	
F.O.B. - F.A.B. Destination	
GST/HST - TPS/TVH See Herein - Voir ci-inclus	Duty - Droits Included - Inclus
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: CANADA SCHOOL OF PUBLIC SERVICE 373 SUSSEX DR. ATT: Irwin Bess OTTAWA Ontario K1N6Z2 Canada	
Invoices - Original and two copies to be sent to: Factures - Envoyer l'original et deux copies à: Specified Herein Précisé dans les présentes	
Address Enquiries to: - Adresser toutes questions à: Lessard, Peter	Buyer Id - Id de l'acheteur 017ee
Telephone No. - N° de téléphone (613) 850-7602 ()	FAX No. - N° de FAX () -
Total Estimated Cost - Coût total estimatif \$169,500.00	Currency Type - Devise CAD
For the Minister - Pour le Ministre Lessard, Peter	
Digitally signed by Lessard, Peter Date: 2019.07.26 14:01:58 -04'00'	

Public Works and Government Services Canada

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Annex B**Statement of Work****1. Title**

Demonstration Project to Develop and Pilot Interactive Regulatory Evaluation Platforms Using Artificial Intelligence Methods

2. Objective

The Canada School of Public Service (CSPS or the School), in serving as Project Authority and technical owner on behalf of a number of federal regulatory departments and agencies, has a requirement for an interactive hosted cloud-based regulatory evaluation platform (REP) that enables users in federal departments and agencies to explore and analyze large amounts of structured and unstructured regulatory data. The solution must have the ability to identify and present key trends, patterns, and inconsistencies in regulations and regulatory requirements. This cloud-based solution, once designed, tested and delivered, will be accessible to up to 200 users in various federal departments and agencies.

3. Background

The School has a mandate to provide a broad range of learning opportunities and to establish a culture of learning within the Public Service. This includes supporting a public service-wide culture of learning that is relevant, responsive, accessible and supportive of broader government objectives with respect to a digital agenda, innovation, and experimentation.

The stock of federal regulations, and relevant United States (U.S.), European Union (E.U.), and provincial/territorial regulations is vast and constantly evolving. As set out in the Cabinet Directive on Regulation (refer to Section 5 – Relevant Terms and Acronyms), federal regulators are required to adopt a regulatory life cycle approach where they must examine and analyze regulations through all stages of their life cycle (development, management, review and results). For many regulatory departments and agencies, this requires that they, among other activities, continually monitor, seek out and evaluate opportunities to reduce regulatory duplication, administrative burden and inefficiencies (including across jurisdictions) as well as to consider the cumulative impacts of regulations on stakeholders.

Reviewing the regulatory stock and informing development of new regulatory approaches can be a complex and time consuming manual task. However, the rising public sector use and capability of artificial intelligence, facilitated by the rise of open source data, big data analytics and the increasing availability of regulations in machine-readable formats suggests that an interactive cloud-based REP could support regulators in a number of areas:

- a. scanning the global regulatory environment to gather publicly available machine readable data and information on how other comparable regulators are adopting or implementing regulations and exercising authorities to develop agile regulatory interventions that meet regulatory objectives;
- b. identifying overlapping, obsolete or outdated regulations or requirements in the regulatory stock as well as opportunities to reduce regulatory burden on stakeholders;
- c. importing trend or point in time data that would help yield insight or context into the effectiveness of regulations in achieving their stated objectives; and
- d. assessing the impacts of regulations on specific sectors of the economy and small business at the Canadian federal level (across departments and agencies) or cumulatively across jurisdictions (e.g., U.S., EU., federal, and provincial/territorial)

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Exploring the potential advances of artificial intelligence through a demonstration project could provide a useful tool for regulatory departments and agencies in carrying out their responsibilities. For departments and agencies participating in this CSPS-led demonstration project, through an interdepartmental project Steering Committee and Project User Group (PUG), organizational learning on how to design and use these tools would be an important outcome. Key participating departments and agencies in this project include: Agriculture and Agri-Food Canada; Community of Federal Regulators (Health Canada); Environment and Climate Change Canada; Innovation, Science and Economic Development Canada; Justice Canada, Transport Canada, and the Treasury Board of Canada Secretariat.

4. Scope

The Contractor must deliver a hosted working cloud-based REP solution that must, based on input data on the stock of 2600 federal regulations as well as available provincial and territorial machine readable regulations, provide an interactive user-friendly interface to search, find, analyze, visualize and generate reports on trends, characteristics, patterns and relationships among an identified set of regulations, regulatory provisions or authorities.

More specifically, the Contractor must deliver a hosted REP solution that must:

- a. apply machine learning, natural language processing to search and find user-identified regulatory text or specific regulations according to user-defined themes and queries;
- b. conduct analysis on characteristics, trends and impacts of a regulation or group of regulations and information based on user-identified parameters;
- c. for the purposes of visualization and reporting; provide the functionality to ingest information from other sources, including through input files and use of internet search techniques, to further augment or enhance the analysis of regulatory text;
- d. provide the functionality to enable REP users to compile analytical outputs such as data visualization and formatted reports on results; and
- e. use publicly available data and data feeds.

5. Relevant Terms and Acronyms

AI: Artificial Intelligence

Cabinet Directive on Regulation: The Cabinet Directive on Regulation (the directive) sets out the Government of Canada's expectations and the requirements in the development, management and review of federal regulations: <https://www.canada.ca/en/treasury-board-secretariat/services/federal-regulatory-management/guidelines-tools/cabinet-directive-regulation.html>

GoC: Government of Canada

ML: Machine Learning

NAICS: North American Industry Classification System

PUG: Project User Group

REP: Regulatory Evaluation Platform

6. Applicable and Reference Documents

6.1 Sample Use Cases:

There are a number of use cases for a REP that reflect the perspective and needs of potential users to be considered when thinking about data, capability and functionality that would form part of the solution. Sample use cases can be found in Appendix 1 to Annex B.

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6.2 Mandatory data sources to be ingested by the solution:

Data	Source	Format	Link
The present list of Acts and Regulations	Justice Canada	XML	<p>The Justice Canada FTP server (ftp://205.193.86.89/) contains a file that is updated on an ongoing basis called data.zip (ftp://205.193.86.89/data.zip) that contains the Acts and Regulations as of the date of archiving. This archive contains Regulations that are marked up in XML format.</p> <p>The data dictionary in English: (http://laws-lois.justice.gc.ca/eng/XML/index.html) and French (http://laws-lois.justice.gc.ca/fra/XML/index.html).</p> <p>It should be noted that the archive also includes Statutory Instruments (filenames that start with SI) are not considered in scope for this project. The archive also contains repealed regulations, which are outside of scope. The <Repealed></Repealed> tag may apply to only parts of the regulation, but may apply to the regulation as a whole.</p>
Point-in-time archive of Acts and Regulations	Justice Canada	XML	On the same FTP, there is a directory for point-in-time archives: (ftp://205.193.86.89/PITXML/). There are ZIP archives as well as an uncompressed file structure. The structure differs slightly from the above in order to accommodate previous dates.
North American Industry Classification System	Statistics Canada	HTML, CSV and PDF	https://www.statcan.gc.ca/eng/subjects/standard/naics/2017/index
United States regulations	Code of Federal Regulations US	XML	https://www.archives.gov/open/dataset-cfr.html
EU legislation	EUR-Lex	API	http://api.epdb.eu/
EU legislation – currently in force	Europa	HTML	https://data.europa.eu/euodp/data/dataset/eu-legislation-in-force
EU legislation – basic acts	Europa	HTML	https://data.europa.eu/euodp/data/dataset/eu-legislation-basic-acts

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6.3 Other sources:

The following are optional data sources and other sources of information that may support the development of the REP solution.

Data	Source	Format	Link
United States regulations	Mercatus Centre, George Mason University	XML	https://quantgov.org/regdata-us/
Canada Gazette I and II – including Regulatory Impact Analysis Statement	Public Services and Procurement Canada	XML – certain years only	http://gazette.gc.ca/xml/
Canada Gazette I and II	Public Services and Procurement Canada	HTML	http://www.gazette.gc.ca/rp-pr/publications-eng.html#a1

Government of Canada Digital Standards:

<https://www.canada.ca/en/government/publicservice/modernizing/government-canada-digital-standards.html>

Example of outcome-based regulations (proposed Safe Foods for Canadians Regulations as published in *Canada Gazette I*) (<http://bit.ly/2lI297x>)

Canadian Importers Database (2016): CSV format

<https://open.canada.ca/data/en/dataset/9d81bb46-de89-41be-b7a4-b76c08f96cff>

Canadian International Merchandise Trade Database: CSV format

(<https://open.canada.ca/data/en/dataset/b1126a07-fd85-4d56-8395-143aba1747a4>)

Canada Business Network information on regulation:

(<https://canadabusiness.ca/government/regulations/>)

2013-14 <https://www.canada.ca/en/treasury-board-secretariat/services/federal-regulatory-management/backgrounder-2013-2014-scorecard-report.html>

2014-15 <https://www.canada.ca/en/treasury-board-secretariat/services/federal-regulatory-management/2014-2015-scorecard-report.html>

Tool and guidance: <https://www.canada.ca/en/treasury-board-secretariat/services/federal-regulatory-management/guidelines-tools.html>

Administrative Burden Baseline specific: <https://www.canada.ca/en/treasury-board-secretariat/services/federal-regulatory-management/administrative-burden-baseline/counting-regulatory-requirements.html>

Directive on Open Government: <https://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=28108>

Open as a Foundation for Digital Government:

<https://open.canada.ca/en/blog/open-foundation-digital-government>

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7. Tasks

An iterative approach with user testing must be undertaken for the design and development of the solution. The Project Authority, with the support of a Steering Committee comprised of a number of federal regulatory departments and agencies, will select users from the Steering Committee member departments to support all stages of the REP project (i.e., Project User Group (PUG)).

The Contractor must complete the following tasks which must be reflected in key deliverables for each stage of the project:

7.1 Stage II: Develop and deliver a REP prototype solution.

The Contractor must:

- a. Attend a kick-off meeting with the Project Authority (organized and coordinated by the Project Authority), by teleconference or in person, to officially launch the project.
- b. Engage the PUG to understand solution requirements, user needs, use cases or recent or emerging legislative, regulatory or policy requirements. The Contract Authority will coordinate and organize engagement sessions with PUG members.
- c. Conduct a review of data architecture, data quality, sources of bias and any ethical considerations, based on available data and meta-data (i.e., enabling acts, regulations and other data sets available in machine readable files) as well as any other information provided by the Project Authority.
- d. Deliver a REP prototype solution in English that meets all the following mandatory requirements. The hosted cloud-based REP prototype solution must have the following features and functionalities:
 - i) capability to build and extract information from a database of U.S., E.U., federal, and provincial/territorial regulations;
 - ii) ability to search and identify comparable regulations that apply to user-specified parameters across jurisdictions (e.g., U.S., E.U., federal, and provincial/territorial);
 - iii) analytical module(s) that enable REP users to cluster, classify, pattern and apply semantic analysis based on user defined parameters in order to identify outdated regulations and assess the flexibility and degree of prescriptivity of regulations;
 - iv) analytical module(s) that enable REP users to extract, compile and visually map regulatory requirements and the level of regulatory burden for identified industry or sectors (e.g. by NAICS code), or groups of stakeholders;
 - v) predetermined (i.e., not customizable) visualization and reporting module(s) that allow users view results generated by the solution relative to imported trend or point in time data that would help yield insight or context into the effectiveness of regulations in achieving their stated objectives;
 - vi) summary information on the Acts and regulations content located at section 6.2 of this document, including the last amended date and registration date of the Act or regulations
 - vii) a mechanism for users to provide solution problems and feedback to the contractor and administrator; and
 - viii) user interface in English to apply user-defined parameters.
- e. Produce and deliver a draft user guide (in English) for users that includes comprehensive instructions on how to use and test the solution. The user guide must be accepted by the Project Authority. Canada will translate the user guide to French. The Contractor's User Guide must be appropriately based on target user's skills, knowledge and competencies,

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and must include practical examples and scenarios. The User Guide must be current, reflect the best practices and accurately reflect opportunities or limitation of use; and must also:

- i) address user needs;
 - ii) have easy to follow instructions;
 - iii) be well outlined; and
 - iv) include easy to follow set-up or access instructions.
- f. Based on the design and functionality of the REP prototype solution developed, submit a draft Implementation, Release and Support Services (IRSS) Plan to the Project Authority. The IRSS Plan must detail:
 - i) findings from data architecture review;
 - ii) applied methodologies and source code where feasible to substantiate the outcomes and support explainable artificial intelligence;
 - iii) contractor's proposed refinements, proposed additional functionality, capability, user access levels;
 - iv) train the trainer course outline; and,
 - v) support and maintenance process that includes:
 - 1) mechanisms and processes for the users and the Project Authority to engage the Contractor on maintenance and service issues;
 - 2) plans to maintain and update the solution during the contract period;
 - 3) measures to resolve any technical performance, usability or functionality issues arising from increased number of users and ongoing use.
- g. Develop and deliver test cases that will support functional testing by the Project Authority and moderated usability testing with 10 users selected by the Project Authority. Test cases must be developed and delivered by the contractor using use cases 1, 2, 3 and 5 in Appendix 1 to Annex B (use cases 4 and 6 are optional) and be designed to assess functionality in the mandatory criteria in Attachment 4 Section 2.2 and the technical point rated criteria in Attachment 4 Section 2.3 (ii). Test cases must include: step by step instructions and all required information to test the functionality/requirements based on use cases 1, 2, 3 and 5 in Appendix 1 to Annex B (use cases 4 and 6 are optional) and usability requirements of the solution as outlined in Attachment 4 Section 2.3 (ii).
- h. Develop and deliver scenarios for moderated usability testing with 10 users selected by the Project Authority to test the usability of the prototype. Scenarios for usability testing will be developed by the contractor using the test cases described in Section 7.1 g. and be designed to help assess the technical point rated criteria in Attachment 4 Section 2.3 (ii). Scenarios must provide: context/background (what task is the user trying to accomplish and why), describe the task to be completed including any relevant information (e.g. names of Acts/Regulations, actions for the user to take like exporting data, searching EU regulations etc.) Scenarios are not to include any instructions on how to complete the task (e.g. which link to click, where the search feature is etc.)
- i. Provide username/password access to the REP prototype solution, for testing and evaluation purposes for 20 users for the duration of Stage II and, if selected, Stage IIIA. The Contractor's REP prototype solution will be evaluated by the PUG via moderated usability testing and functional testing. Assessment of the REP prototype solution's functionality will be conducted using test cases provided by the Contractor to fulfill requirements of common use cases and scenarios that will be consistently applied by the users. Assessment of the prototype solutions usability will be conducted using the scenarios provided by the Contractor to fulfill the usability requirements of the solution as outlined in Attachment 4

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Section 2.3 (ii).

Stage III Options

7.2 Stage III:

7.2.1 Stage III - A: Finalization and delivery of the REP solution

Based on the draft IRSS plan, delivered in the Stage II, the Contractor must finalize and deliver a hosted production ready solution no later than March 20, 2020 to the Project Authority.

If selected to proceed with the Stage III option, the Contractor must:

- a. Attend a kick-off meeting with the Project Authority (organized and coordinated by the Project Authority), by teleconference or in person, to launch Stage III of the project.
- b. Consult the PUG to discuss and review requirements, use cases and/or recent or emerging legislative, regulatory or policy requirements that could impact the final REP Solution. The Project Authority will coordinate and organize engagement sessions with PUG members.
- c. Submit an updated Implementation, Release and Support Services (IRSS) Plan to the Project Authority that also includes:
 - i) GoC digital and architectural standards integration in to the solution;
 - ii) Government of Canada accessibility and Official language standards integration in to the solution.
- d. Upon acceptance of the updated IRSS Plan, the contractor must make all necessary adjustments to the final REP solution.
- e. Deliver a hosted production ready REP solution, with updated user guide to address the refinements, proposed additional functionality, capability, user access levels made to the REP prototype solution and draft user guide to the Project Authority.
- f. Configure the REP Solution to be compliant with modern operating systems and browsers. This includes but is not limited to: Internet Explorer 9 and its newer version without modification, Google chrome and its newer version without modification, Safari and its newer version without modification and Firefox and its newer version without modification.
- g. Configure the REP Solution to adhere to the Government of Canada Web Usability requirements found on the Treasury Board of Canada Secretariat website at: <http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=24227>.
- h. Configure the REP Solution to comply with relevant policies of the Government of Canada Official Languages Act and the Directive on Official Languages for Communications and Services. The REP Solution must allow all users to work in both of Canada's official languages (English and French), and must allow the users to set the REP Solution to the official language of his/her choice. Refer to the following websites for a description of the Directive on Official Languages for Communications and Services: <http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=26164> and <http://www.tbs-sct.gc.ca/pol/doc-fra.aspx?id=26164>.
- i. Develop and deliver updated test cases that will support functional testing and moderated usability testing of the refinements, proposed additional functionality, capability, user access

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levels made to the REP prototype solution with 10 users selected by the Project Authority to test the usability of the final production ready solution. Test cases must be developed and delivered by the contractor using use cases 1, 2, 3 and 5 in Appendix 1 to Annex B (use cases 4 and 6 are optional).

- j. Develop and deliver updated scenarios for moderated usability testing of the refinements, proposed additional functionality, capability, user access levels made to the REP prototype solution with 10 users selected by the Project Authority to test the usability of the production ready solution. Scenarios for usability testing must be developed by the contractor using the test cases described in Section 7.1 i. Scenarios must provide: context/background (what task is the user trying to accomplish and why), describe the task to be completed including any relevant information (e.g. names of Acts/Regulations, actions for the user to take like exporting data, searching EU regulations etc.) Scenarios are not to include any instructions on how to complete the task (e.g. which link to click, where the search feature is etc.)

7.2.2 Stage III - B: Hosting of REP Solution Hosting, Support and Training

The Contractor must make the hosted production ready REP solution available to users (200 users) and provide training, ongoing support, maintenance and resolution of any technical issues (e.g., solution freeze, crash or return of incorrect information).

The Contractor must provide:

- a. Access, including usernames and passwords, to the hosted production ready REP solution for 200 end users and one administrator account with the following rights and access; create users, assign accounts, lock and unlock user accounts, link to new data sources, generate usage reports.
- b. training materials in support of a web-based train-the-trainer approach. The Contractor must train designated GC trainers who will in turn familiarize the Authenticated Users with the product and its use. The Contractor must deliver at least one (1) training seminar in Canadian English (maximum twenty (20) participants) where the Project Authority will provide translation services where required.
- c. support and maintenance of the REP Solution.
- d. optional Task Authorized Professional Services. The Work described in the TA must be in accordance with the scope of the Contract. Work considered to be in accordance with the scope of the Contract could include but not limited to Work associated to updating the accepted REP Solution as a result of changes to the Government of Canada Web Accessibility Standard, adding new functionalities to the accepted solution and adapting to changes in the solution's IT environment. Appendix 2 to Annex B identifies the categories of work, including a description that may be required to undertake task authorized work on this requirement.

8. Contractor Deliverables

All document deliverables must be in MS Word format.

8.1 Stage II:

The project launch is defined as the kick-off meeting with the Project Authority.

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Item	Description	Timelines
1	Prototype REP solution with access for 20 users	65 business days from Project Launch
2	Draft Implementation, Release and Support Services (IRSS) Plan to Project Authority	65 business days from Project Launch
3	Draft User guide to Project Authority	65 business days from Project Launch
4	Test cases, for the use cases provided by Canada in Appendix 1 (A Test Case is a set of conditions or instructions under which the PUG will determine the REP prototype solution satisfies the requirements and works correctly)	65 business days from Project Launch
5	Scenarios, using the use cases provided by Canada in Appendix 1 (A scenario is a fictional situation and task provided to a user during moderated usability testing to determine if the REP prototype solution satisfies the usability requirements)	65 business days from Project Launch

Estimated timelines for the following activities:

Description	Estimated Timelines
PUG evaluation of prototype REP solution	Completed within 15 business days from receipt of REP prototype solution
Decision on prototype selection to proceed to Stage III work	Within 20 business days from receipt of prototype REP solution

8.2 Stage III: Refinement and finalization of the REP solution

Item	Ref.	Description	Timelines
1	7.2.1	Kick-off meeting to launch Stage III of the project (i.e. Stage IIIA Launch)	Within 5 business days of exercise of contract option.
2	7.2.1	Submit Final IRSS Plan and Project Management in MSWord format to the Project Authority for review and acceptance	20 business days from Stage III Launch
3	7.2.1	Deliver hosted production ready REP solution based on accepted IRSS plan for acceptance	80 business days from acceptance of updated IRSS Plan

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4	7.2.1	Updated Test cases using the use cases provided by Canada, for functionality testing (A Test Case is a set of conditions or instructions under which the PUG will determine the production ready solution satisfies the requirements and works correctly)	80 business days from acceptance of updated IRSS Plan
5	7.2.1	Updated Scenarios, using the use cases provided by Canada, will be used to assess usability of the production ready solution (A scenario is a fictional situation and task provided to a user during moderated usability testing to determine if the production ready solution satisfies the usability requirements)	80 business days from acceptance of updated IRSS Plan
6	7.2.1	Deliver User guide to Project Authority	80 business days from acceptance of updated IRSS Plan
7	7.2.2	Provide Subscription based access to the cloud hosted production ready REP solution for 200 users, including maintenance and support services	10 business days from acceptance of final REP solution
8	7.2.2	Deliver train the trainer session	Within 10 business days from acceptance for the final REP solution

8.3 Review and Acceptance of all deliverables provided by the Contractor

Final acceptance of all deliverables, including the production ready REP solution, will occur when all discrepancies, errors or other deficiencies identified by the Project Authority have been addressed by the Contractor and approved by the Project Authority.

9. Reporting Requirements

The Contractor must provide weekly status reports to the Project Authority in English in MSWord outlining progress for the given period, any issues or considerations and upcoming milestones.

10. Client Support

The Project Authority will be responsible for supporting the coordination of the overall project, providing as-required direction and guidance to the Contractor, and accepting and approving deliverables on behalf of the project Steering Committee.

The Project Authority will ensure that appropriate subject matter experts from federal departments and agencies, via the PUG, are available to the Contractor as required, to provide input, answer questions, evaluate deliverables for acceptance and participate in meetings to enable the Contractor to proceed on schedule with the completion of all required deliverables.

As required, CSPS will provide ongoing timely support to the Contractor within the scope of the statement of work.

The CSPS will make facilities available for web-based training purposes.

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11. Meetings

Kick-off meetings (in person or via teleconference) will be held for Stages II and III of the project, with 30 minute meetings every two weeks (calls or in-person) between the Project Authority and the Contractor. In addition to the bi-weekly meetings with the Project Authority, the Contractor must be available to meet during Stage III with the Steering Committee on a monthly basis via teleconference to provide brief updates on the project and discuss any issues (current or anticipated).

Meetings with members of the PUG will be held in person or via teleconference.

12. Location of Work

The Work must be performed at the Contractor's premises, Training and project review meetings may be conducted by Webex or teleconference.

13. Official Language Requirements and Language of Work

The primary language of work will be in English and all reports, technical documents and project updates must be provided in English.

The prototype REP solution and the interface for the prototype solution (i.e., interface used by users) must be in English. The final REP solution, including the interface, must comply with relevant policies of the Government of Canada Official Languages Act and the Directive on Official Languages for Communications and Services.

The REP solution must allow all users to work in both of Canada's official languages (English and French). Refer to the following websites for a description of the Directive on Official Languages for Communications and Services:

- a. <http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=26164>
- b. <http://www.tbs-sct.gc.ca/pol/doc-fra.aspx?id=26164>

14. Travel and Living

Travel is not mandatory for this Work. Therefore, travel and living expenses will not be reimbursed under any resulting Contract.

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Appendix 1 to Annex B

Regulatory Evaluation Platform – Use Cases for Required Solution

Use cases 1, 2, 3 and 5 must be demonstrated in the Stage II usability assessment and will be scored based on the evaluation criteria in Attachment 4. Use cases 4 and 6 should be demonstrated in the Stage II usability assessment and will be scored based on the evaluation criteria in Attachment 4.

<u>Category</u>	<u>Mandatory / Optional</u>	<u>Use Case – Context/Challenge/Required Solution</u>
1.Characteristics and prioritization based on key attributes Compile information on individual regulations and prioritize regulations for modernization based on presence or predominance of attributes of interest to users	Mandatory	<p><u>Context:</u> Identifying overlapping, outdated or burdensome regulations is a key responsibility of all regulators. However, departments responsible for a large number of regulations that need to be modernized may not have the resources or time required to amend all of them at the same time. As such, revisions or updates must be prioritized.</p> <p><u>Challenge:</u> Regulators consider a number of criteria when determining whether and when a particular regulation will be revised and in what order, including mitigating health and safety risks, improving socio-economic outcomes, political priorities, legal risks, stakeholder support/opposition etc. While some of these factors may be more difficult to determine with AI, analytics and machine learning may be appropriate and effective in evaluating the complexity of the regulation, alignment with relevant international regulations, overlap with similar provincial regulations, level of prescriptively, and whether specific sections of regulations have been subject to court challenges.</p> <p>Some departments such as Innovation Science and Economic Development (ISED) have a large diverse portfolio (i.e., 16 organizations with responsibility for approximately. 57 Acts and 139 regulations) spanning bankruptcy, consumer affairs, copyright, investment, industrial design, national security, not-for-profit corporations, patents, telecommunication, internal trade, trademarks, and weights and measures, among others. ISED is also responsible for approximately 22 service standards for high-volume regulatory authorizations. A REP solution would help regulators within ISED take better stock of the department's regulations and support priority setting, including from the perspective of: the prescriptiveness of ISED's Acts and Regulations; their currency or outdatedness; their alignment with the regimes of Canada's trading partners; and their complexity.</p> <p><u>TEST CASE SCENARIO</u></p> <p>1.0 Functionality Assessed</p> <p>Design and build analytical module(s) that enable users to:</p> <ol style="list-style-type: none"> Cluster, classify, pattern and apply semantic analysis in order to identify outdated regulations or requirements

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		<p>b) Conduct analysis on characteristics, trends and impacts of a regulation or group of regulations and information based on user-identified parameters.</p> <p>The REP solution should allow users to be able to complete the following tasks:</p> <ol style="list-style-type: none"> Identify and compile information on the age, prescriptivity, use of conflicting, overlapping or outdated terminology, links to other regulations and whether the regulation has been subject to a court challenge and Prioritize regulations for modernization based on user defined filters and setting for the prevalence of the above required characteristics based on a recommended methodology provided by the contractor. <p>2.0 Test case requirements to be assessed</p> <p>Part A – ISED Case</p> <ol style="list-style-type: none"> Find all 139 regulations under the purview of ISED (as provided in the data sources 3.0) among the federal stock (2600 regulations) Compile metrics on the ISED regulations compared to the broader federal regulatory stock in terms of number of regulations that have been updated within the last 5 years, 10, 25, or more than 25 years since update. Generate a rank order list of the 139 regulations in terms of priority for potential modernization that considers age, prescriptivity, use of conflicting, overlapping or outdated terminology based upon the contractors suggested methodology Provide user ability to alter the list of priority regulations for modernization by manipulating user defined filters or settings for the methodology provided by the contractor Generate tables summarizing results of the above analysis Generate a network graph visualizing linkages between the 139 ISED regulations and the overall stock of 2600 federal regulations Generate an output file for above analysis for import into MS Excel <p>Part B – ECCC Case</p> <ol style="list-style-type: none"> Find all 78 regulations under the purview of ECCC (as provided in the data sources 4.0) among the federal stock (2600 regulations) Compile metrics on the ECCC regulations alone as well as compared to the broader federal regulatory stock in terms of the number and name of the regulations that have been updated within the last 5 years, 6-10, 11-25, or more than 25 years since last update Generate a rank order list of ECCC regulations in terms of priority for potential modernization that considers age, prescriptivity, use of conflicting, overlapping or outdated
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		<p>terminology based upon the contractors suggested methodology.</p> <ol style="list-style-type: none"> 4. Provide user ability to alter the list of priority regulations for modernization by manipulating user defined filters or settings for the methodology provided by the contractor 5. Provide user ability to search across ECCC regulations and categorize them by a number of different features and characteristics to be defined by the user [e.g. chemical/substance/species name, age of regulation, type of regulation, reporting/permitting requirements, type of environmental and risk management objective (e.g. air emissions, water effluent, land-based releases), geographic location, target dates, sector impacted, etc.] 6. Provide user ability to search ECCC's stock of regulations to find user-identified regulatory text and in the results display the actual paragraph of the regulation in which the words were found 7. Ability to save "queries" for future use 8. Generate separate tables summarizing the results of the above analysis (items 3, 4, and 5) 9. Generate network graphs visualizing linkages between the stock of ECCC regulations alone and as well as with the overall stock of 2600 federal regulations 10. Generate output files for the above analysis for export into MS Excel <p>3.0 Data Sources and Information:</p> <p>Mandatory</p> <ul style="list-style-type: none"> • See statement of work 6.2. <p>Optional</p> <ul style="list-style-type: none"> • <u>Departmental Results Report 2017-18</u> • <u>ISED Acts and Regulations</u> (including forward regulatory plan, service standards, interpretation policy an administrative burden baseline) • <u>ISED website and links to regulatory portfolio partners etc.</u> • <u>Final report: Economic Strategy Tables Seizing Opportunities for Growth</u> • <u>TBS annual report to Parliament</u> (start on page 29, administrative burden counts) • <u>Cabinet Directive on Regulations: Policies, guidance and tools</u> • Summary Fall Economic Statement - Government of Canada Regulatory Modernization Commitments (attached)
<p>2. Consequential impacts</p> <p>Consequential impacts of proposed amendments and linkages among regulations</p>	<p>Mandatory</p>	<p><u>Context:</u> Proposed amendments to existing legislation or regulation often result in consequential amendments. These are amendments that have to be made to another part of the regulation or to a completely different regulation as a result of the original intended amendment.</p> <p><u>Challenge:</u> Determining the impact of a particular regulatory change on other regulations can be tedious and time consuming task, subject to human error, and requires that individuals have some knowledge or</p>

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		<p>expertise on how different regulations are interrelated. Prior to making a change to the definition of a word, analysts must assess all the instances of where that word is used, including the context within which it was used, as well as whether other regulations reference sections of the regulation that use that word. This process may have to be repeated to ensure that this consequential change does not trigger further changes in other areas. This process would have to be repeated until all impacted regulations have been identified.</p> <p>For example, many regulations and statutes rely on terms defined in other regimes (e.g. "environment" as defined in CEPA, 1999, "airport" as defined in the Aeronautics Act, etc.). Many other regimes rely on broader concepts established in other regulations or Acts (e.g. Regulation/Act X applies to an operator or facility that is subject to the regime in Regulation/Act Y)</p> <p><u>TEST CASE SCENARIO</u></p> <p>1.0 Functionality Assessed</p> <p>Apply machine learning, natural language processing to search and find user-identified regulatory text or specific regulations and related or relevant regulations according to user-defined themes and queries.</p> <p>The REP solution should allow user to conduct analysis on use of specific words and terms (as identified by the user), to identify whether other regulations use that same term and if it has been defined differently or used differently in other areas, etc. Moreover, the REP solution should allow the user, when considering removing or modifying a section of a regulation, to figure out what other provisions in the statute book (i.e. the various acts and regulations taken together) apply to the same activity or subject to which the provision being amended applies.</p> <p>2.0 Test case requirements to be assessed</p> <ul style="list-style-type: none"> Find all references to words xxx among the federal stock (2600 regulations) Compile a tabular report listing all references to the words xxxx by regulation and the actual paragraph within which the words were used Generate a network graph visualizing linkages between regulations that used the words xxxx Generate an output file for above analysis for import into MS Excel <p>3.0 Data Sources and Information</p> <p>Mandatory</p> <ul style="list-style-type: none"> See statement of work 6.2.
3. Cumulative Impacts	<u>Mandatory</u>	<p><u>Context:</u></p> <p>Mapping cumulative burden (i.e. cost and administrative impact) across jurisdictions has been a long-standing challenge for regulators. Canada-wide, many businesses operate multiple</p>

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Cumulative burden and impacts	<p>business lines, spanning many sectors (NAICs codes), various regions and jurisdiction (foreign, federal, provincial-territorial (FFPT)).</p> <p><u>Challenge:</u></p> <p>Gaining a greater understanding of the cumulative impact of regulations and impacts on innovation and growth is time and labour intensive, requiring significant engagement of federal departments, other jurisdictions, and research and analysis of disparate sources (e.g., Department of Justice website, Treasury Board of Canada Secretariat (TBS) and departmental websites).</p> <p>In the Agrifood-Agriculture space, for example, approximately 28 Acts and 246 regulations fall under the purview of Agriculture and Agri-Food Canada and the Canadian Food Inspection Agency, although some experts estimate that there are upwards of 130,000 federal requirements that potentially impose an administrative and cost burden on business. Moreover, Statistics Canada estimates that Ontario alone oversees more than 380,000 regulations. Improving understanding cumulative interjurisdictional cost and administrative burden would provide valuable input to policy proposals and advice.</p> <p><u>TEST CASE SCENARIO</u></p> <p>1.0 Functionality Assessed</p> <p>Design/build analytical module(s) that enable REP users to extract, compile and visually map regulatory requirements and the level of regulatory burden for identified industry or sectors (e.g. by NAICS code), size of business (e.g., small business) or groups of stakeholders as defined by users.</p> <p>The REP solution should allow end users to compile information and visually map both the number and characteristics of FPT regulations, for a given NAICs (3-digit or more) that would yield insight on cumulative interjurisdictional regulatory burden, and the corresponding impacts on business. The REP solution will be assessed on its ability to map federal regulations along a specific segment of the agriculture sector (i.e., beef and canola) based on the given data and information provided.</p> <p>2.0 Test case requirements to be assessed</p> <p>Part A – AAFC Case</p> <ul style="list-style-type: none"> Find all federal, provincial and territorial regulations and related burden data that apply to beef and canola-oilseeds (NAICS 112110 & 111120) directly and indirectly. Import data files produced by external tools on the characteristics of documents (e.g., cost to purchase) incorporated by reference into relevant regulations. Compile a report summarizing the total number of federal and provincial regulations that apply to the sector and requirements that apply.
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		<ul style="list-style-type: none"> • Generate a charts or graph visualizing the quantity and degree of regulatory burden. • Generate an output file for above analysis for import into MS Excel. <p>NAICS code overview for context and background information: https://www.statcan.gc.ca/eng/subjects/standard/naics/2017/index</p> <p>Part B – ECCC Case</p> <ul style="list-style-type: none"> • Find all federal, provincial and territorial regulations and related burden data that apply to chemical manufacturing (NAICS 325), petroleum manufacturing (NAICS 324) and transportation equipment manufacturing (NAICS 336). Provide the ability to filter the results by jurisdiction (e.g. just ECCC regulations; just Ontario; ECCC and Ontario, BC and Alberta; etc.). • Import data files produced by external tools on the characteristics of documents (e.g., cost to purchase) incorporated by reference into relevant regulations. • Compile a report summarizing the total number of federal and provincial regulations and the requirements that apply to each sector. • Generate charts or graphs visualizing the quantity and degree of regulatory burden. • Generate an output file for above analysis for import into MS Excel. <p>3.0 Data Sources and Information</p> <p>Mandatory</p> <ul style="list-style-type: none"> • See statement of work 6.2. <p>Optional</p> <ul style="list-style-type: none"> • Cattle (beef) NAICS 112110 6 digit code: http://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVD&TVD=1181553&CVD=1182006&CPV=11211&CST=01012017&CLV=4&MLV=5 • Canola and other oilseed NAICS 111120 6 digit code: http://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getVD&TVD=1181553&CVD=1182718&CPV=111120&CST=01012017&CLV=5&MLV=5
<p>4. Compiling multiple sources of data related to a regulation(s)</p> <p>Compiling multiple sources of data and finding patterns in unstructured data</p>	Optional	<p><u>Context:</u> Advanced analytics and machine learning have an important role to play in enabling regulators to combine multiple sources of info and data to assess the effectiveness of regulations in achieving their stated objectives. Regulators currently rely on a number of websites, on-line forums, and open data forums to scan the regulatory environment and gain access to regulatory data and information both within and outside of Canada.</p> <p><u>Challenge:</u> No comprehensive platform currently exists for federal departments and agencies to house results of scans of the global regulatory environment for publicly available machine readable data and online information relevant to a Canadian regulation or regulatory</p>

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		<p>issue. The absence of an analytics platform to gather and analyze information on how other comparable regulators are adopting or implementing regulations, including the characteristics and attributes of those regulations, would support the ability of regulators to pursue new interventions that meet regulatory objectives.</p> <p>Transport Canada, for example, follows regulatory developments in the US, and participates at the UN's World Forum for Harmonization of Vehicle Regulations. The Forum's website is the main tool for TC to scan the global regulatory environment for vehicle regulation information in addition to other tools (e.g. Interregs). Moreover, within the domain of road vehicle data, a number of open data sets and public information exists on autonomous vehicles or vehicle recalls. However, no analytical platform exists to combine and relate these sources of data with the characteristics and attributions of the acts or regulations to which they apply.</p> <p><u>TEST CASE SCENARIO</u></p> <p><u>Note: The functionality contained below will be assessed as a pointed rated technical criteria and is not considered mandatory for acceptance of the solution.</u></p> <p>1.0 Functionality Assessed</p> <p>Design/build analytical module(s) that combine multiple sources of information and data that would, when combined with regulatory text, yield insight into the effectiveness of regulations in achieving their stated objectives (i.e., apply machine readable text and other inputs from a variety of sources that could provide context or indicators of the impact on regulated parties, stakeholders and the public);</p> <p>The REP solution should have the capability to: 1) import foreign, provincial and territorial regulations that are available in machine-readable format and 2) import datasets that are related or relevant to a regulation(s) or results in order to allow users identify patterns in unstructured data to inform regulatory or policy interventions.</p> <p>2.0 Test case requirements to be assessed</p> <ol style="list-style-type: none"> 1. Find all federal and provincial vehicle regulations as provided in 3.0 2. Import foreign vehicle regulations as provided in 3.0 3. Import vehicle recall data as provided in 3.0. 4. Analyze trends in regulatory change and trends in vehicle recalls etc. 5. Generate an output file for above analysis for import into MS Excel. <p>3.0 Data Sources and Information</p> <p>Mandatory</p> <ul style="list-style-type: none"> • See statement of work 6.2.
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		<p>Optional</p> <ul style="list-style-type: none"> UN World Forum for Harmonization of Vehicle Regulations (WP.29) https://www.unece.org/trans/main/wp29/introduction.html Autonomous Vehicles and self-driving data http://bdd-data.berkeley.edu/ Vehicle recall databases on the Open Government portal (https://open.canada.ca/data/en/dataset/1ec92326-47ef-4110-b7ca-959fab03f96d)
5.Comparative Analysis across jurisdictions	<u>Mandatory</u>	<p><u>Context:</u></p> <p>The ability to compare the characteristics and attributes of individual regulations and groups of regulations from one jurisdiction to another (e.g. federal versus provincial or foreign against federal and provincial (i.e. Canada)) is a key task and ongoing concern of regulators. Under the Cabinet Directive on Regulations, departments and agencies must examine regulations from the perspective of, among others, alignment of regulatory approaches and outcomes with key trading partners in order to reduce the regulatory burden on Canadian business, while maintaining or improving the health, safety, security, social and economic well-being of Canadians, and protecting the environment.</p> <p><u>Challenge:</u></p> <p>The stock of regulations that could be compared between federal, provincial and U.S. regulations is very large and constantly evolving. Assessing opportunities for inter-jurisdictional alignment of regulations, particularly through the lens of impacts on specific sectors of the economy and small business, could be accelerated through advanced analytics and machine learning. A summer 2018 study by Mercatus (George Washington University) created a comprehensive listing for example, of federal-provincial-territorial and U.S regulations in machine readable format (see data sources). Without a platform for comparative analysis of this data, it will be difficult for Canadian regulators to extract deeper and practical insights to inform regulatory alignment and coordination activities.</p> <p><u>TEST CASE SCENARIO</u></p> <p>1.0 Functionality Assessed</p> <p>Design and build solution with the functionality to search and identify comparable regulations that apply to user-specified parameters at: 1) federal level (across departments or agencies) and 2) cumulatively across jurisdictions (e.g., foreign, federal, and provincial/territorial);</p> <p>The REP solution should, based upon an identified methodology, allow for assessment and reporting on the degree of similarity or differences between regulations through calculated of scores or measure.</p>

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		<p>2.0 Test case requirements to be assessed</p> <ol style="list-style-type: none"> 1. Find all regulations in Canada and the U.S 2. Generate a rank order list of regulations for the Canada and U.S. that are the highest in terms of similarity of content 3. Estimate cumulative number of regulations that require a licence to operate in in Canada and the U.S. 4. Generate tables and charts or graphs summarizing results of the above analysis 5. Generate an output file for above analysis for import into MS Excel. <p>3.0 Data Sources and Information</p> <p>Mandatory</p> <ul style="list-style-type: none"> • See statement of work 6.2. <p>Optional</p> <ul style="list-style-type: none"> • Mercatus – quantgov data.
<p>6.Connecting Legislation and Regulation to Service Delivery</p> <p>Inserts and comments to acts and regulations to improve analysis and support broader regulatory design and management objectives over time.</p>	<p>Optional</p>	<p><u>Context:</u></p> <p>Datasets and underlying structures for acts and regulations must be designed for AI based analytics platforms so that they can be sufficiently flexible to leverage and receive human input and expert knowledge and to connect to the broader suite of regulatory design, oversight, regulatory management and service delivery activities.</p> <p><u>Challenge/Issue:</u></p> <p>Research and understanding on the application of computational linguistics and semantic analysis to legislation and regulatory text is relatively new, and understanding of practical application for regulators, legislative drafters and stakeholders will continue to evolve. Algorithms, tools and platforms for analysis or acts and regulations will need to be very flexible and designed to:</p> <ol style="list-style-type: none"> 1) receive expert input from users; 2) adjust based on verification of outputs by users; and 3) adjust key input parameters for methodologies to support research and evolving research findings. <p>Moreover, beyond design, coming into force and monitoring of acts and regulations, it is important that they support regulatory management and service delivery objectives. Studies by the New Zealand government, for example, found that machine consumable legislation that is co-developed with a variety of uses (policy analysts, legislative drafters, service designers and software developers) enables legislation, business rules, and service delivery software to be developed in parallel, ensuring consistency of application, and significantly speeding up the service delivery to people, increases the opportunities to automate and integrate service delivery (including through the use of artificial intelligence). However, regulatory organization at a national or state level may use different tools, systems and coding structures that prevent common and consistent use of acts and regulations in machine readable format, thereby restricting the broader potential use and</p>

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		<p>applications to compliance monitoring, verification and service delivery.</p> <p>A REP solution, that ingests or imports foreign, federal, provincial-territorial in machine readable process, that would be subject to an review of data architecture (meta data, labelling and constraints) could be complemented by the ability of users to engage in supervised learning to improve the efficiency of algorithms for regulatory analysis (clustering/network analysis, semantic analysis) as well as insertion of pseudo code, comments and labels to support downstream delivery and regulatory management objectives.</p> <p><u>TEST CASE SCENARIO</u></p> <p>1.0 Functionality Assessed</p> <p><u>Note: The functionality contained below will be assessed as a pointed rated technical criteria and is not considered mandatory for acceptance of the solution.</u></p> <p>Ability to insert comments, commentary or "tag" data elements identified in queries which should also facilitate building of a solution and data architecture that better responds to the needs of the user over time;</p> <p>2.0 Test case requirements to be assessed:</p> <ol style="list-style-type: none"> 1. Find Act xxx and Regulation yyyy 2. Locate provision xxx... 3. Insert the following text: fakfhksaofsohf. 4. Generate a tabular report summarizing above labelling and insertion of comments into the dataset 5. Generate an output file for the above Act and regulation in XML format <p>3.0 Data Sources and Information</p> <p>Mandatory</p> <ul style="list-style-type: none"> • See statement of work 6.2. <p>Optional</p> <ul style="list-style-type: none"> • See statement of work 6.3.
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Appendix 2 to Annex B

Category of Work and Descriptions

CATEGORY OF WORK	DESCRIPTION
Application/ Software Architect	<p>Responsibilities could include but are not limited to:</p> <ul style="list-style-type: none"> • Develop technical architectures, frameworks and strategies, either for an organization or for a major application area, to meet the business and application requirements • Identify the policies and requirements that drive out a particular solution • Analyze and evaluate alternative technology solutions to meet business problems • Ensures the integration of all aspects of technology solutions • Monitor industry trends to ensure that solutions fit with government and industry directions for technology • Analyze functional requirements to identify information, procedures and decision flows • Evaluate existing procedures and methods, identify and document database content, structure, and application sub-systems, and develop data dictionary • Define and document interfaces of manual to automated operations within application sub-systems, to external systems and between new and existing systems • Define input/output sources, including detailed plan for technical design phase, and obtain approval of the system proposal • Identify and document system specific standards relating to programming, documentation and testing, covering program libraries, data dictionaries, naming conventions, etc. •
Programmer/ Software Developer	<p>Responsibilities could include but are not limited to:</p> <ul style="list-style-type: none"> • Develop and prepare diagrammatic plans for solution of business, scientific and technical problems by means of computer systems of significant size and complexity • Analyze the problems outlined by the systems analysts/designers in terms of such factors as style and extent of information to be transferred to and from storage units, variety of items to be processed, extent of sorting, and format of final printed results • Select and incorporate available software programs • Design detailed programs, flow charts, and diagrams indicating mathematical computation and sequence of machine operations necessary to copy and process data and print the results • Translate detailed flow charts into coded machine instructions and confer with technical personnel in planning programs • Verify accuracy and completeness of programs by preparing sample data, and testing them by means of system acceptance test runs made by operating personnel • Correct program errors by revising instructions or altering the sequence of operations • Test instructions, and assemble specifications, flow charts, diagrams, layouts, programming and operating instructions to document applications for later modification or reference

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Tester	<p>Responsibilities could include but are not limited to:</p> <ul style="list-style-type: none"> • Test planning and coordination • Supervision of testing in accordance with the plan • Management and monitoring of test plans for all levels of testing • Management of walkthroughs and reviews related to testing and implementation readiness • Status reporting • Development of test scenarios and test scripts • Establishing and maintaining source and object code libraries for a multi-platform, multi-operating system environment • Establishing software testing procedures for unit test, integration testing and regression testing with emphasis on automating the testing procedures • Establishing and operating "interoperability" testing procedures to ensure that the interaction and co-existence of various software elements, which are proposed to be distributed on the common infrastructure, conform to appropriate departmental standards (e.g. For performance, compatibility, etc.) and have no unforeseen detrimental effects on the shared infrastructure • Establishing a validation and verification capability which assumes functional and performance compliance
Web Developer	<p>Responsibilities could include but are not limited to:</p> <ul style="list-style-type: none"> • Develop and prepare diagrammatic plans for web based service delivery over the internet • Analyze the problems outlined by systems analysts/designers in terms of such factors as style and extent of information to be transferred across the internet • Select and use the best available web development tools for linking the internet based client to the departmental "back end" information delivery programs and databases • Design high-usability web pages to meet the requirement • Verify accuracy and completeness of programs by preparing sample data, and testing them by means of system acceptance test runs made by operating personnel • Correct program errors by revising instructions or altering the sequence of operations • Test instructions, and assemble specifications, flow charts, diagrams, layouts, programming and operating instructions to document applications for later modification or reference
Web Graphics Designer	<p>Responsibilities could include but are not limited to:</p> <ul style="list-style-type: none"> • Create web pages including graphic design • Develop and implement usability tests, analyses result and modify design accordingly • Develop flowcharts (web site flow maps) depicting navigation and content • Develop line drawings or block diagrams illustrating the priority of information, links, navigation and space requirements • Develop content diagrams showing the interactive connection between pages • Develop interactive prototypes showing basic form and functionality used for both usability testing and presentations
Data Conversion Specialist	<p>Responsibilities could include but are not limited to:</p> <ul style="list-style-type: none"> • Oversee all facilities of the conversion process. • Complete mapping, interfaces, mock conversion work, enhancements, actual conversion, and verify completeness and accuracy of converted data.

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	<ul style="list-style-type: none"> Establish a strong working relationship with all clients, interact effectively with all levels of client personnel, and provide conversion support. Analyze and coordinate data file conversions Work with importing files from heterogeneous platforms
Database Modeller/ Information Management Modeller	<p>Responsibilities could include but are not limited to:</p> <ul style="list-style-type: none"> The Data Architect has both strategic and tactical responsibility for developing and maintaining the Architecture and Data Models for corporate and project specific initiatives. This responsibility includes the identification of data most valuable to the department, the integration of this data, and the development of core relating data models. The resulting data models will be based on data architecture and modeling design principles and tenets Design, develop and maintain Logical Data Models Analyze proposed changes to databases from the context of the Logical Data Model. Provide technical expertise in the use and optimization of data modeling techniques to team members Provide technical assistance, guidance and direction in terms of data analysis and modeling to team members Provide assistance to project team and business users relating to data issues and data analysis concepts Participate in the development of data modeling and metadata policies and procedures Participate in data analysis as a result of new/updated requirements Apply approved changes to logical data models Comply with corporate data architectures, strategies and frameworks, including enterprise data warehouse activities Analyze and evaluate alternative data architecture solutions to meet business problems/requirements to be incorporated into the corporate data architecture Review corporate architecture strategies and directions, data requirements, and business information needs and devise data structures to support them Improve modeling efficiency through recommendations on how to better utilize current metadata repositories Comply with corporate repository metadata directions Provide input to refinement of data architectures Participate in data architecture refinement Define access strategies Construct, monitor and report on work plans and schedules
Business Analyst	<p>Responsibilities could include but are not limited to:</p> <ul style="list-style-type: none"> Develop and document statements of requirements for considered alternatives Perform business analyses of functional requirements to identify information, procedures, and decision flows Evaluate existing procedures and methods, identify and document items such as database content, structure, application subsystems Define and document interfaces of manual to automated operations within application subsystems, to external systems, and between new and existing systems Establish acceptance test criteria with client Support and use the selected departmental methodologies
Technical Writer	<p>Responsibilities could include but are not limited to:</p>

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	<ul style="list-style-type: none"> • Document help text, user manuals, technical documentation, web page content, etc • Review documentation standards and the existing project documentation • Determine documentation requirements and makes plans for meeting them • Gather information concerning the features and functions provided by the developers • Assess the audience for the documents/manuals which are required and prepare a statement of purpose and scope for each • Develop a table of content for each document/manual and write or edit the required content • Investigate the accuracy of the information collected by making direct use of the material being documented • Prepare or coordinate the preparation of any required illustrations and diagrams • Design the layout of the documents/manuals • Use word-processing, desk-top publishing and graphics software packages to produce final camera-ready copy
Project Coordinator	<p>Responsibilities could include but are not limited to:</p> <ul style="list-style-type: none"> • Assist project management and data processing professionals, technical users and end users in project coordination and synchronization tasks • Provide administrative and technical support of a clerical nature as required to a project team • Assist in performing such tasks as maintaining project documentation and application/system libraries • Act as the first or single point of contact in a "hot-line" situation by accepting incoming calls, logging calls, attempting to resolve simple problems and following established procedures for more difficult problems • Track project change requests • Maintain and updates relevant project information in manual and/or electronic files; project information might include such things as project activity schedule, status reports, correspondence • Use computer tools, aids, system control languages on PCs, minis, or mainframes to perform work • Communicate with project management and data processing professionals, technical users and end users on administrative matters related to the project
Project Manager	<p>Responsibilities could include but are not limited to:</p> <ul style="list-style-type: none"> • Manage several Project Managers, each responsible for an element of the project and its associated project team • Manage the project during the development, implementation and operations startup by ensuring that resources are made available and that the project is developed and is fully operational within previously agreed time, cost and performance parameters • Formulate statements of problems; establishes procedures for the development and implementation of significant, new or modified project elements to solve these problems, and obtains approval thereof • Define and document the objectives for the project; determine budgetary requirements, the composition, roles and responsibilities and terms of reference for the project team • Report progress of the project on an ongoing basis and at scheduled points in the life cycle • Meets in conference with stakeholders and other project managers and states problems in a form capable of being solved

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	<ul style="list-style-type: none"> • Prepare plans, charts, tables and diagrams to assist in analyzing or displaying problems; work with a variety of project management tools • Project sign-off
Quality Assurance Specialist/Analyst	<p>Responsibilities could include but are not limited to:</p> <ul style="list-style-type: none"> • Lead development of test plans, test scripts and test data • Participate in functional and technical design reviews, perform integration/functional and system testing, and verify test results • Identify and document software defects • Participate with other project resources to resolve defects • Perform regression testing of software applications
Data Scientist	<p>Responsibilities could include but are not limited to:</p> <ul style="list-style-type: none"> • Create ETL and data transformation internal libraries; • Benchmark Machine Learning algorithms against the current state of the art; • Build a Machine Learning (ML) pipeline from data ingest through to solutions for specific use cases; • Use ETL and Big Data tools to develop an efficient and accurate data workflow; • Apply a wide variety of Machine Learning algorithms to real-world data sets; • Work closely with Researchers and AI Developers to ensure data and Machine Learning models are being used effectively; • Analyze and document ethical implications of applications of data science and ML pipelines.
Research Scientist	<p>Responsibilities could include but are not limited to:</p> <ul style="list-style-type: none"> • Conduct applied research to challenge the status quo in our industry; • Work hand-to-hand with Software Architects and Engineers using scientific programming to convert prototypes into tangible products • Collaborate with specialized Researchers to examine challenging problems; • To develop new models and optimize existing ones; • Propose innovative strategies related to consumer behaviors and requirements; • Publish original research papers, create patents and attend conferences.

Pages 153 to / à 157
are not relevant
sont non pertinentes



Purchasing Office - Bureau des achats:

Systems Software Procurement Division /
Division des achats des logiciels d'exploitation
Terrasses de la Chaudière
4th Floor, 10 Wellington Street
4th étage, 10, rue Wellington
Gatineau
Quebec
K1A 0S5

CONTRACT - CONTRAT

Your proposal is accepted to sell to Her Majesty the Queen
in right of Canada, in accordance with the terms and conditions
set out herein, referred to herein or attached hereto, the goods,
services, and construction listed herein and on any attached
sheets at the price or prices set out therefor.

Nous acceptons votre proposition de vendre à Sa Majesté
la Reine du chef du Canada, aux conditions énoncées ou
incluses par référence dans les présentes, et aux annexes
ci-jointes, les biens, services et construction énumérés dans
les présentes, et sur toute feuille ci-annexée, au(x) prix indiqué(s).

Comments - Commentaires

Vendor/Firm Name and Address

**Raison sociale et adresse du
fournisseur/de l'entrepreneur**

864461322PG0001
Lixar I.T. Inc.
373 Coventry Road
Ottawa
Ontario
K1K2C5
Canada

Title - Sujet AI Based Services - REP - Stage 1	
Contract No. - N° du contrat 0X001-182587/002/EE	Date 2019-07-26
Client Reference No. - N° de référence du client 0X001-182587	
Requisition No. - N° de la demande 0X001-182587	
File No. - N° de dossier 017ee.0X001-182587	CCC No./N° CCC - FMS No./N° VME
Financial Code(s) Code(s) financier(s) 0520-C10-1K40-54701-C66110-IOCS122	
GST/HST TPS/TVH <input type="checkbox"/>	
F.O.B. - F.A.B. Destination	
GST/HST - TPS/TVH See Herein - Voir ci-inclus	Duty - Droits Included - Inclus
Destination - of Goods, Services, and Construction: Destination - des biens, services et construction: CANADA SCHOOL OF PUBLIC SERVICE 373 SUSSEX DR. ATT: Irwin Bess OTTAWA Ontario K1N6Z2 Canada	
Invoices - Original and two copies to be sent to: Factures - Envoyer l'original et deux copies à: Specified Herein Précisé dans les présentes	
Address Enquiries to: - Adresser toutes questions à: Lessard, Peter	Buyer Id - Id de l'acheteur 017ee
Telephone No. - N° de téléphone (613) 850-7602 ()	FAX No. - N° de FAX () -
Total Estimated Cost - Coût total estimatif \$169,500.00	Currency Type - Devise CAD
For the Minister - Pour le Ministre Lessard, Peter	

Digitally signed by Lessard, Peter
Date: 2019.07.26 14:02:43 -04'00'

Public Works and Government Services Canada

Travaux publics et Services gouvernementaux Canada

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**Pages 160 to / à 181
are not relevant
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Annex B**Statement of Work****1. Title**

Demonstration Project to Develop and Pilot Interactive Regulatory Evaluation Platforms Using Artificial Intelligence Methods

2. Objective

The Canada School of Public Service (CSPS or the School), in serving as Project Authority and technical owner on behalf of a number of federal regulatory departments and agencies, has a requirement for an interactive hosted cloud-based regulatory evaluation platform (REP) that enables users in federal departments and agencies to explore and analyze large amounts of structured and unstructured regulatory data. The solution must have the ability to identify and present key trends, patterns, and inconsistencies in regulations and regulatory requirements. This cloud-based solution, once designed, tested and delivered, will be accessible to up to 200 users in various federal departments and agencies.

3. Background

The School has a mandate to provide a broad range of learning opportunities and to establish a culture of learning within the Public Service. This includes supporting a public service-wide culture of learning that is relevant, responsive, accessible and supportive of broader government objectives with respect to a digital agenda, innovation, and experimentation.

The stock of federal regulations, and relevant United States (U.S.), European Union (E.U.), and provincial/territorial regulations is vast and constantly evolving. As set out in the Cabinet Directive on Regulation (refer to Section 5 – Relevant Terms and Acronyms), federal regulators are required to adopt a regulatory life cycle approach where they must examine and analyze regulations through all stages of their life cycle (development, management, review and results). For many regulatory departments and agencies, this requires that they, among other activities, continually monitor, seek out and evaluate opportunities to reduce regulatory duplication, administrative burden and inefficiencies (including across jurisdictions) as well as to consider the cumulative impacts of regulations on stakeholders.

Reviewing the regulatory stock and informing development of new regulatory approaches can be a complex and time consuming manual task. However, the rising public sector use and capability of artificial intelligence, facilitated by the rise of open source data, big data analytics and the increasing availability of regulations in machine-readable formats suggests that an interactive cloud-based REP could support regulators in a number of areas:

- a. scanning the global regulatory environment to gather publicly available machine readable data and information on how other comparable regulators are adopting or implementing regulations and exercising authorities to develop agile regulatory interventions that meet regulatory objectives;
- b. identifying overlapping, obsolete or outdated regulations or requirements in the regulatory stock as well as opportunities to reduce regulatory burden on stakeholders;
- c. importing trend or point in time data that would help yield insight or context into the effectiveness of regulations in achieving their stated objectives; and
- d. assessing the impacts of regulations on specific sectors of the economy and small business at the Canadian federal level (across departments and agencies) or cumulatively across jurisdictions (e.g., U.S., EU., federal, and provincial/territorial)

Exploring the potential advances of artificial intelligence through a demonstration project could provide a useful tool for regulatory departments and agencies in carrying out their responsibilities.

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For departments and agencies participating in this CSPA-led demonstration project, through an interdepartmental project Steering Committee and Project User Group (PUG), organizational learning on how to design and use these tools would be an important outcome. Key participating departments and agencies in this project include: Agriculture and Agri-Food Canada; Community of Federal Regulators (Health Canada); Environment and Climate Change Canada; Innovation, Science and Economic Development Canada; Justice Canada, Transport Canada, and the Treasury Board of Canada Secretariat.

4. Scope

The Contractor must deliver a hosted working cloud-based REP solution that must, based on input data on the stock of 2600 federal regulations as well as available provincial and territorial machine readable regulations, provide an interactive user-friendly interface to search, find, analyze, visualize and generate reports on trends, characteristics, patterns and relationships among an identified set of regulations, regulatory provisions or authorities.

More specifically, the Contractor must deliver a hosted REP solution that must:

- a. apply machine learning, natural language processing to search and find user-identified regulatory text or specific regulations according to user-defined themes and queries;
- b. conduct analysis on characteristics, trends and impacts of a regulation or group of regulations and information based on user-identified parameters;
- c. for the purposes of visualization and reporting; provide the functionality to ingest information from other sources, including through input files and use of internet search techniques, to further augment or enhance the analysis of regulatory text;
- d. provide the functionality to enable REP users to compile analytical outputs such as data visualization and formatted reports on results; and
- e. use publicly available data and data feeds.

5. Relevant Terms and Acronyms

AI: Artificial Intelligence

Cabinet Directive on Regulation: The Cabinet Directive on Regulation (the directive) sets out the Government of Canada's expectations and the requirements in the development, management and review of federal regulations: <https://www.canada.ca/en/treasury-board-secretariat/services/federal-regulatory-management/guidelines-tools/cabinet-directive-regulation.html>

GoC: Government of Canada

ML: Machine Learning

NAICS: North American Industry Classification System

PUG: Project User Group

REP: Regulatory Evaluation Platform

6. Applicable and Reference Documents

6.1 Sample Use Cases:

There are a number of use cases for a REP that reflect the perspective and needs of potential users to be considered when thinking about data, capability and functionality that would form part of the solution. Sample use cases can be found in Appendix 1 to Annex B.

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6.2 Mandatory data sources to be ingested by the solution:

Data	Source	Format	Link
The present list of Acts and Regulations	Justice Canada	XML	<p>The Justice Canada FTP server (ftp://205.193.86.89/) contains a file that is updated on an ongoing basis called data.zip (ftp://205.193.86.89/data.zip) that contains the Acts and Regulations as of the date of archiving. This archive contains Regulations that are marked up in XML format.</p> <p>The data dictionary in English: (http://laws-lois.justice.gc.ca/eng/XML/index.html) and French (http://laws-lois.justice.gc.ca/fra/XML/index.html).</p> <p>It should be noted that the archive also includes Statutory Instruments (filenames that start with SI) are not considered in scope for this project. The archive also contains repealed regulations, which are outside of scope. The <Repealed></Repealed> tag may apply to only parts of the regulation, but may apply to the regulation as a whole.</p>
Point-in-time archive of Acts and Regulations	Justice Canada	XML	On the same FTP, there is a directory for point-in-time archives: (ftp://205.193.86.89/PITXML/). There are ZIP archives as well as an uncompressed file structure. The structure differs slightly from the above in order to accommodate previous dates.
North American Industry Classification System	Statistics Canada	HTML, CSV and PDF	https://www.statcan.gc.ca/eng/subjects/standard/naics/2017/index
United States regulations	Code of Federal Regulations US	XML	https://www.archives.gov/open/dataset-cfr.html
EU legislation	EUR-Lex	API	http://api.epdb.eu/
EU legislation – currently in force	Europa	HTML	https://data.europa.eu/euodp/data/dataset/eu-legislation-in-force
EU legislation – basic acts	Europa	HTML	https://data.europa.eu/euodp/data/dataset/eu-legislation-basic-acts

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6.3 Other sources:

The following are optional data sources and other sources of information that may support the development of the REP solution.

Data	Source	Format	Link
United States regulations	Mercatus Centre, George Mason University	XML	https://quantgov.org/regdata-us/
Canada Gazette I and II – including Regulatory Impact Analysis Statement	Public Services and Procurement Canada	XML – certain years only	http://gazette.gc.ca/xml/
Canada Gazette I and II	Public Services and Procurement Canada	HTML	http://www.gazette.gc.ca/rp-pr/publications-eng.html#a1

Government of Canada Digital Standards:

<https://www.canada.ca/en/government/publicservice/modernizing/government-canada-digital-standards.html>

Example of outcome-based regulations (proposed Safe Foods for Canadians Regulations as published in *Canada Gazette I*) (<http://bit.ly/2l297x>)

Canadian Importers Database (2016): CSV format

<https://open.canada.ca/data/en/dataset/9d81bb46-de89-41be-b7a4-b76c08f96cff>

Canadian International Merchandise Trade Database: CSV format

(<https://open.canada.ca/data/en/dataset/b1126a07-fd85-4d56-8395-143aba1747a4>)

Canada Business Network information on regulation:

(<https://canadabusiness.ca/government/regulations/>)

2013-14 <https://www.canada.ca/en/treasury-board-secretariat/services/federal-regulatory-management/backgrounder-2013-2014-scorecard-report.html>

2014-15 <https://www.canada.ca/en/treasury-board-secretariat/services/federal-regulatory-management/2014-2015-scorecard-report.html>

Tool and guidance: <https://www.canada.ca/en/treasury-board-secretariat/services/federal-regulatory-management/guidelines-tools.html>

Administrative Burden Baseline specific: <https://www.canada.ca/en/treasury-board-secretariat/services/federal-regulatory-management/administrative-burden-baseline/counting-regulatory-requirements.html>

Directive on Open Government: <https://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=28108>

Open as a Foundation for Digital Government:

<https://open.canada.ca/en/blog/open-foundation-digital-government>

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7. Tasks

An iterative approach with user testing must be undertaken for the design and development of the solution. The Project Authority, with the support of a Steering Committee comprised of a number of federal regulatory departments and agencies, will select users from the Steering Committee member departments to support all stages of the REP project (i.e., Project User Group (PUG)).

The Contractor must complete the following tasks which must be reflected in key deliverables for each stage of the project:

7.1 Stage II: Develop and deliver a REP prototype solution.

The Contractor must:

- a. Attend a kick-off meeting with the Project Authority (organized and coordinated by the Project Authority), by teleconference or in person, to officially launch the project.
- b. Engage the PUG to understand solution requirements, user needs, use cases or recent or emerging legislative, regulatory or policy requirements. The Contract Authority will coordinate and organize engagement sessions with PUG members.
- c. Conduct a review of data architecture, data quality, sources of bias and any ethical considerations, based on available data and meta-data (i.e., enabling acts, regulations and other data sets available in machine readable files) as well as any other information provided by the Project Authority.
- d. Deliver a REP prototype solution in English that meets all the following mandatory requirements. The hosted cloud-based REP prototype solution must have the following features and functionalities:
 - i) capability to build and extract information from a database of U.S., E.U., federal, and provincial/territorial regulations;
 - ii) ability to search and identify comparable regulations that apply to user-specified parameters across jurisdictions (e.g., U.S., E.U., federal, and provincial/territorial);
 - iii) analytical module(s) that enable REP users to cluster, classify, pattern and apply semantic analysis based on user defined parameters in order to identify outdated regulations and assess the flexibility and degree of prescriptivity of regulations;
 - iv) analytical module(s) that enable REP users to extract, compile and visually map regulatory requirements and the level of regulatory burden for identified industry or sectors (e.g. by NAICS code), or groups of stakeholders;
 - v) predetermined (i.e., not customizable) visualization and reporting module(s) that allow users view results generated by the solution relative to imported trend or point in time data that would help yield insight or context into the effectiveness of regulations in achieving their stated objectives;
 - vi) summary information on the Acts and regulations content located at section 6.2 of this document, including the last amended date and registration date of the Act or regulations
 - vii) a mechanism for users to provide solution problems and feedback to the contractor and administrator; and
 - viii) user interface in English to apply user-defined parameters.
- e. Produce and deliver a draft user guide (in English) for users that includes comprehensive instructions on how to use and test the solution. The user guide must be accepted by the Project Authority. Canada will translate the user guide to French. The Contractor's User Guide must be appropriately based on target user's skills, knowledge and competencies, and must include practical examples and scenarios. The User Guide must be current, reflect

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the best practices and accurately reflect opportunities or limitation of use; and must also:

- i) address user needs;
 - ii) have easy to follow instructions;
 - iii) be well outlined; and
 - iv) include easy to follow set-up or access instructions.
- f. Based on the design and functionality of the REP prototype solution developed, submit a draft Implementation, Release and Support Services (IRSS) Plan to the Project Authority. The IRSS Plan must detail:
 - i) findings from data architecture review;
 - ii) applied methodologies and source code where feasible to substantiate the outcomes and support explainable artificial intelligence;
 - iii) contractor's proposed refinements, proposed additional functionality, capability, user access levels;
 - iv) train the trainer course outline; and,
 - v) support and maintenance process that includes:
 - 1) mechanisms and processes for the users and the Project Authority to engage the Contractor on maintenance and service issues;
 - 2) plans to maintain and update the solution during the contract period;
 - 3) measures to resolve any technical performance, usability or functionality issues arising from increased number of users and ongoing use.
- g. Develop and deliver test cases that will support functional testing by the Project Authority and moderated usability testing with 10 users selected by the Project Authority. Test cases must be developed and delivered by the contractor using use cases 1, 2, 3 and 5 in Appendix 1 to Annex B (use cases 4 and 6 are optional) and be designed to assess functionality in the mandatory criteria in Attachment 4 Section 2.2 and the technical point rated criteria in Attachment 4 Section 2.3 (ii). Test cases must include: step by step instructions and all required information to test the functionality/requirements based on use cases 1, 2, 3 and 5 in Appendix 1 to Annex B (use cases 4 and 6 are optional) and usability requirements of the solution as outlined in Attachment 4 Section 2.3 (ii).
- h. Develop and deliver scenarios for moderated usability testing with 10 users selected by the Project Authority to test the usability of the prototype. Scenarios for usability testing will be developed by the contractor using the test cases described in Section 7.1 g. and be designed to help assess the technical point rated criteria in Attachment 4 Section 2.3 (ii). Scenarios must provide: context/background (what task is the user trying to accomplish and why), describe the task to be completed including any relevant information (e.g. names of Acts/Regulations, actions for the user to take like exporting data, searching EU regulations etc.) Scenarios are not to include any instructions on how to complete the task (e.g. which link to click, where the search feature is etc.)
- i. Provide username/password access to the REP prototype solution, for testing and evaluation purposes for 20 users for the duration of Stage II and, if selected, Stage IIIA. The Contractor's REP prototype solution will be evaluated by the PUG via moderated usability testing and functional testing. Assessment of the REP prototype solution's functionality will be conducted using test cases provided by the Contractor to fulfill requirements of common use cases and scenarios that will be consistently applied by the users. Assessment of the prototype solutions usability will be conducted using the scenarios provided by the Contractor to fulfill the usability requirements of the solution as outlined in Attachment 4 Section 2.3 (ii).

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Stage III Options**7.2 Stage III:****7.2.1 Stage III - A: Finalization and delivery of the REP solution**

Based on the draft IRSS plan, delivered in the Stage II, the Contractor must finalize and deliver a hosted production ready solution no later than March 20, 2020 to the Project Authority.

If selected to proceed with the Stage III option, the Contractor must:

- a. Attend a kick-off meeting with the Project Authority (organized and coordinated by the Project Authority), by teleconference or in person, to launch Stage III of the project.
- b. Consult the PUG to discuss and review requirements, use cases and/or recent or emerging legislative, regulatory or policy requirements that could impact the final REP Solution. The Project Authority will coordinate and organize engagement sessions with PUG members.
- c. Submit an updated Implementation, Release and Support Services (IRSS) Plan to the Project Authority that also includes:
 - i) GoC digital and architectural standards integration in to the solution;
 - ii) Government of Canada accessibility and Official language standards integration in to the solution.
- d. Upon acceptance of the updated IRSS Plan, the contractor must make all necessary adjustments to the final REP solution.
- e. Deliver a hosted production ready REP solution, with updated user guide to address the refinements, proposed additional functionality, capability, user access levels made to the REP prototype solution and draft user guide to the Project Authority.
- f. Configure the REP Solution to be compliant with modern operating systems and browsers. This includes but is not limited to: Internet Explorer 9 and its newer version without modification, Google chrome and its newer version without modification, Safari and its newer version without modification and Firefox and its newer version without modification.
- g. Configure the REP Solution to adhere to the Government of Canada Web Usability requirements found on the Treasury Board of Canada Secretariat website at: <http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=24227>.
- h. Configure the REP Solution to comply with relevant policies of the Government of Canada Official Languages Act and the Directive on Official Languages for Communications and Services. The REP Solution must allow all users to work in both of Canada's official languages (English and French), and must allow the users to set the REP Solution to the official language of his/her choice. Refer to the following websites for a description of the Directive on Official Languages for Communications and Services: <http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=26164> and <http://www.tbs-sct.gc.ca/pol/doc-fra.aspx?id=26164>.
- i. Develop and deliver updated test cases that will support functional testing and moderated usability testing of the refinements, proposed additional functionality, capability, user access levels made to the REP prototype solution with 10 users selected by the Project Authority to test the usability of the final production ready solution. Test cases must be developed and delivered by the contractor using use cases 1, 2, 3 and 5 in Appendix 1 to Annex B (use cases 4 and 6 are optional).

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- j. Develop and deliver updated scenarios for moderated usability testing of the refinements, proposed additional functionality, capability, user access levels made to the REP prototype solution with 10 users selected by the Project Authority to test the usability of the production ready solution. Scenarios for usability testing must be developed by the contractor using the test cases described in Section 7.1 i. Scenarios must provide: context/background (what task is the user trying to accomplish and why), describe the task to be completed including any relevant information (e.g. names of Acts/Regulations, actions for the user to take like exporting data, searching EU regulations etc.) Scenarios are not to include any instructions on how to complete the task (e.g. which link to click, where the search feature is etc.)

7.2.2 Stage III - B: Hosting of REP Solution Hosting, Support and Training

The Contractor must make the hosted production ready REP solution available to users (200 users) and provide training, ongoing support, maintenance and resolution of any technical issues (e.g., solution freeze, crash or return of incorrect information).

The Contractor must provide:

- a. Access, including usernames and passwords, to the hosted production ready REP solution for 200 end users and one administrator account with the following rights and access; create users, assign accounts, lock and unlock user accounts, link to new data sources, generate usage reports.
- b. training materials in support of a web-based train-the-trainer approach. The Contractor must train designated GC trainers who will in turn familiarize the Authenticated Users with the product and its use. The Contractor must deliver at least one (1) training seminar in Canadian English (maximum twenty (20) participants) where the Project Authority will provide translation services where required.
- c. support and maintenance of the REP Solution.
- d. optional Task Authorized Professional Services. The Work described in the TA must be in accordance with the scope of the Contract. Work considered to be in accordance with the scope of the Contract could include but not limited to Work associated to updating the accepted REP Solution as a result of changes to the Government of Canada Web Accessibility Standard, adding new functionalities to the accepted solution and adapting to changes in the solution's IT environment. Appendix 2 to Annex B identifies the categories of work, including a description that may be required to undertake task authorized work on this requirement.

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8. Contractor Deliverables

All document deliverables must be in MS Word format.

8.1 Stage II:

The project launch is defined as the kick-off meeting with the Project Authority.

Item	Description	Timelines
1	Prototype REP solution with access for 20 users	65 business days from Project Launch
2	Draft Implementation, Release and Support Services (IRSS) Plan to Project Authority	65 business days from Project Launch
3	Draft User guide to Project Authority	65 business days from Project Launch
4	Test cases, for the use cases provided by Canada in Appendix 1 (A Test Case is a set of conditions or instructions under which the PUG will determine the REP prototype solution satisfies the requirements and works correctly)	65 business days from Project Launch
5	Scenarios, using the use cases provided by Canada in Appendix 1 (A scenario is a fictional situation and task provided to a user during moderated usability testing to determine if the REP prototype solution satisfies the usability requirements)	65 business days from Project Launch

Estimated timelines for the following activities:

Description	Estimated Timelines
PUG evaluation of prototype REP solution	Completed within 15 business days from receipt of REP prototype solution
Decision on prototype selection to proceed to Stage III work	Within 20 business days from receipt of prototype REP solution

8.2 Stage III: Refinement and finalization of the REP solution

Item	Ref.	Description	Timelines
1	7.2.1	Kick-off meeting to launch Stage III of the project (i.e. Stage IIIA Launch)	Within 5 business days of exercise of contract option.
2	7.2.1	Submit Final IRSS Plan and Project Management in MSWord format to the Project Authority for review and acceptance	20 business days from Stage III Launch

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3	7.2.1	Deliver hosted production ready REP solution based on accepted IRSS plan for acceptance	80 business days from acceptance of updated IRSS Plan
4	7.2.1	Updated Test cases using the use cases provided by Canada, for functionality testing (A Test Case is a set of conditions or instructions under which the PUG will determine the production ready solution satisfies the requirements and works correctly)	80 business days from acceptance of updated IRSS Plan
5	7.2.1	Updated Scenarios, using the use cases provided by Canada, will be used to assess usability of the production ready solution (A scenario is a fictional situation and task provided to a user during moderated usability testing to determine if the production ready solution satisfies the usability requirements)	80 business days from acceptance of updated IRSS Plan
6	7.2.1	Deliver User guide to Project Authority	80 business days from acceptance of updated IRSS Plan
7	7.2.2	Provide Subscription based access to the cloud hosted production ready REP solution for 200 users, including maintenance and support services	10 business days from acceptance of final REP solution
8	7.2.2	Deliver train the trainer session	Within 10 business days from acceptance for the final REP solution

8.3 Review and Acceptance of all deliverables provided by the Contractor

Final acceptance of all deliverables, including the production ready REP solution, will occur when all discrepancies, errors or other deficiencies identified by the Project Authority have been addressed by the Contractor and approved by the Project Authority.

9. Reporting Requirements

The Contractor must provide weekly status reports to the Project Authority in English in MSWord outlining progress for the given period, any issues or considerations and upcoming milestones.

10. Client Support

The Project Authority will be responsible for supporting the coordination of the overall project, providing as-required direction and guidance to the Contractor, and accepting and approving deliverables on behalf of the project Steering Committee.

The Project Authority will ensure that appropriate subject matter experts from federal departments and agencies, via the PUG, are available to the Contractor as required, to provide input, answer questions, evaluate deliverables for acceptance and participate in meetings to enable the Contractor to proceed on schedule with the completion of all required deliverables.

As required, CSPS will provide ongoing timely support to the Contractor within the scope of the

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The CSPS will make facilities available for web-based training purposes.

11. Meetings

Kick-off meetings (in person or via teleconference) will be held for Stages II and III of the project, with 30 minute meetings every two weeks (calls or in-person) between the Project Authority and the Contractor. In addition to the bi-weekly meetings with the Project Authority, the Contractor must be available to meet during Stage III with the Steering Committee on a monthly basis via teleconference to provide brief updates on the project and discuss any issues (current or anticipated).

Meetings with members of the PUG will be held in person or via teleconference.

12. Location of Work

The Work must be performed at the Contractor's premises, Training and project review meetings may be conducted by Webex or teleconference.

13. Official Language Requirements and Language of Work

The primary language of work will be in English and all reports, technical documents and project updates must be provided in English.

The prototype REP solution and the interface for the prototype solution (i.e., interface used by users) must be in English. The final REP solution, including the interface, must comply with relevant policies of the Government of Canada Official Languages Act and the Directive on Official Languages for Communications and Services.

The REP solution must allow all users to work in both of Canada's official languages (English and French). Refer to the following websites for a description of the Directive on Official Languages for Communications and Services:

- a. <http://www.tbs-sct.gc.ca/pol/doc-eng.aspx?id=26164>
- b. <http://www.tbs-sct.gc.ca/pol/doc-fra.aspx?id=26164>

14. Travel and Living

Travel is not mandatory for this Work. Therefore, travel and living expenses will not be reimbursed under any resulting Contract.

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Appendix 1 to Annex B**Regulatory Evaluation Platform – Use cases for required solution**

Use cases 1, 2, 3 and 5 must be demonstrated in the Stage II usability assessment and will be scored based on the evaluation criteria in Attachment 4. Use cases 4 and 6 should be demonstrated in the Stage II usability assessment and will be scored based on the evaluation criteria in Attachment 4.

<u>Category</u>	<u>Mandatory / Optional</u>	<u>Use Case – Context/Challenge/Required Solution</u>
<i>1.Characteristics and prioritization based on key attributes</i> Compile information on individual regulations and prioritize regulations for modernization based on presence or predominance of attributes of interest to users	<u>Mandatory</u>	<p><u>Context:</u> Identifying overlapping, outdated or burdensome regulations is a key responsibility of all regulators. However, departments responsible for a large number of regulations that need to be modernized may not have the resources or time required to amend all of them at the same time. As such, revisions or updates must be prioritized.</p> <p><u>Challenge:</u> Regulators consider a number of criteria when determining whether and when a particular regulation will be revised and in what order, including mitigating health and safety risks, improving socio-economic outcomes, political priorities, legal risks, stakeholder support/opposition etc. While some of these factors may be more difficult to determine with AI, analytics and machine learning may be appropriate and effective in evaluating the complexity of the regulation, alignment with relevant international regulations, overlap with similar provincial regulations, level of prescriptively, and whether specific sections of regulations have been subject to court challenges.</p> <p>Some departments such as Innovation Science and Economic Development (ISED) have a large diverse portfolio (i.e., 16 organizations with responsibility for approximately. 57 Acts and 139 regulations) spanning bankruptcy, consumer affairs, copyright, investment, industrial design, national security, not-for-profit corporations, patents, telecommunication, internal trade, trademarks, and weights and measures, among others. ISED is also responsible for approximately 22 service standards for high-volume regulatory authorizations. A REP solution would help regulators within ISED take better stock of the department's regulations and support priority setting, including from the perspective of: the prescriptiveness of ISED's Acts and Regulations; their currency or outdatedness; their alignment with the regimes of Canada's trading partners; and their complexity.</p> <p><u>TEST CASE SCENARIO</u></p> <p><i>1.0 Functionality Assessed</i></p> <p>Design and build analytical module(s) that enable users to:</p> <ol style="list-style-type: none"> Cluster, classify, pattern and apply semantic analysis in order to identify outdated regulations or requirements

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		<p>b) Conduct analysis on characteristics, trends and impacts of a regulation or group of regulations and information based on user-identified parameters.</p> <p>The REP solution should allow users to be able to complete the following tasks:</p> <ol style="list-style-type: none"> Identify and compile information on the age, prescriptivity, use of conflicting, overlapping or outdated terminology, links to other regulations and whether the regulation has been subject to a court challenge and Prioritize regulations for modernization based on user defined filters and setting for the prevalence of the above required characteristics based on a recommended methodology provided by the contractor. <p>2.0 Test case requirements to be assessed</p> <p>Part A – ISED Case</p> <ol style="list-style-type: none"> Find all 139 regulations under the purview of ISED (as provided in the data sources 3.0) among the federal stock (2600 regulations) Compile metrics on the ISED regulations compared to the broader federal regulatory stock in terms of number of regulations that have been updated within the last 5 years, 10, 25, or more than 25 years since update. Generate a rank order list of the 139 regulations in terms of priority for potential modernization that considers age, prescriptivity, use of conflicting, overlapping or outdated terminology based upon the contractors suggested methodology Provide user ability to alter the list of priority regulations for modernization by manipulating user defined filters or settings for the methodology provided by the contractor Generate tables summarizing results of the above analysis Generate a network graph visualizing linkages between the 139 ISED regulations and the overall stock of 2600 federal regulations Generate an output file for above analysis for import into MS Excel <p>Part B – ECCC Case</p> <ol style="list-style-type: none"> Find all 78 regulations under the purview of ECCC (as provided in the data sources 4.0) among the federal stock (2600 regulations) Compile metrics on the ECCC regulations alone as well as compared to the broader federal regulatory stock in terms of the number and name of the regulations that have been updated within the last 5 years, 6-10, 11-25, or more than 25 years since last update Generate a rank order list of ECCC regulations in terms of priority for potential modernization that considers age, prescriptivity, use of conflicting, overlapping or outdated
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		<p>terminology based upon the contractors suggested methodology.</p> <ol style="list-style-type: none"> 4. Provide user ability to alter the list of priority regulations for modernization by manipulating user defined filters or settings for the methodology provided by the contractor 5. Provide user ability to search across ECCC regulations and categorize them by a number of different features and characteristics to be defined by the user [e.g. chemical/substance/species name, age of regulation, type of regulation, reporting/permitting requirements, type of environmental and risk management objective (e.g. air emissions, water effluent, land-based releases), geographic location, target dates, sector impacted, etc.] 6. Provide user ability to search ECCC's stock of regulations to find user-identified regulatory text and in the results display the actual paragraph of the regulation in which the words were found 7. Ability to save "queries" for future use 8. Generate separate tables summarizing the results of the above analysis (items 3, 4, and 5) 9. Generate network graphs visualizing linkages between the stock of ECCC regulations alone and as well as with the overall stock of 2600 federal regulations 10. Generate output files for the above analysis for export into MS Excel <p>3.0 Data Sources and Information:</p> <p>Mandatory</p> <ul style="list-style-type: none"> • See statement of work 6.2. <p>Optional</p> <ul style="list-style-type: none"> • <u>Departmental Results Report 2017-18</u> • <u>ISED Acts and Regulations</u> (including forward regulatory plan, service standards, interpretation policy an administrative burden baseline) • <u>ISED website and links to regulatory portfolio partners etc.</u> • Final report: Economic Strategy Tables <u>Seizing Opportunities for Growth</u> • <u>TBS annual report to Parliament</u> (start on page 29, administrative burden counts) • <u>Cabinet Directive on Regulations: Policies, guidance and tools</u> • Summary Fall Economic Statement - Government of Canada Regulatory Modernization Commitments (attached)
<p>2. Consequential impacts</p> <p>Consequential impacts of proposed amendments and linkages among regulations</p>	<p><u>Mandatory</u></p>	<p><u>Context:</u> Proposed amendments to existing legislation or regulation often result in consequential amendments. These are amendments that have to be made to another part of the regulation or to a completely different regulation as a result of the original intended amendment.</p> <p><u>Challenge:</u></p>

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		<p>Determining the impact of a particular regulatory change on other regulations can be tedious and time consuming task, subject to human error, and requires that individuals have some knowledge or expertise on how different regulations are interrelated. Prior to making a change to the definition of a word, analysts must assess all the instances of where that word is used, including the context within which it was used, as well as whether other regulations reference sections of the regulation that use that word. This process may have to be repeated to ensure that this consequential change does not trigger further changes in other areas. This process would have to be repeated until all impacted regulations have been identified.</p> <p>For example, many regulations and statutes rely on terms defined in other regimes (e.g. "environment" as defined in CEPA, 1999, "airport" as defined in the Aeronautics Act, etc.). Many other regimes rely on broader concepts established in other regulations or Acts (e.g. Regulation/Act X applies to an operator or facility that is subject to the regime in Regulation/Act Y)</p> <p><u>TEST CASE SCENARIO</u></p> <p>1.0 Functionality Assessed</p> <p>Apply machine learning, natural language processing to search and find user-identified regulatory text or specific regulations and related or relevant regulations according to user-defined themes and queries.</p> <p>The REP solution should allow user to conduct analysis on use of specific words and terms (as identified by the user), to identify whether other regulations use that same term and if it has been defined differently or used differently in other areas, etc. Moreover, the REP solution should allow the user, when considering removing or modifying a section of a regulation, to figure out what other provisions in the statute book (i.e. the various acts and regulations taken together) apply to the same activity or subject to which the provision being amended applies.</p> <p>2.0 Test case requirements to be assessed</p> <ul style="list-style-type: none"> Find all references to words xxx among the federal stock (2600 regulations) Compile a tabular report listing all references to the words xxxx by regulation and the actual paragraph within which the words were used Generate a network graph visualizing linkages between regulations that used the words xxxx Generate an output file for above analysis for import into MS Excel <p>3.0 Data Sources and Information</p> <p>Mandatory</p> <ul style="list-style-type: none"> See statement of work 6.2.
3. Cumulative Impacts	<u>Mandatory</u>	<u>Context:</u>

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Cumulative burden and impacts	<p>Mapping cumulative burden (i.e. cost and administrative impact) across jurisdictions has been a long-standing challenge for regulators. Canada-wide, many businesses operate multiple business lines, spanning many sectors (NAICs codes), various regions and jurisdiction (foreign, federal, provincial-territorial (FFPT)).</p> <p><u>Challenge:</u></p> <p>Gaining a greater understanding of the cumulative impact of regulations and impacts on innovation and growth is time and labour intensive, requiring significant engagement of federal departments, other jurisdictions, and research and analysis of disparate sources (e.g., Department of Justice website, Treasury Board of Canada Secretariat (TBS) and departmental websites).</p> <p>In the Agrifood-Agriculture space, for example, approximately 28 Acts and 246 regulations fall under the purview of Agriculture and Agri-Food Canada and the Canadian Food Inspection Agency, although some experts estimate that there are upwards of 130,000 federal requirements that potentially impose an administrative and cost burden on business. Moreover, Statistics Canada estimates that Ontario alone oversees more than 380,000 regulations. Improving understanding cumulative interjurisdictional cost and administrative burden would provide valuable input to policy proposals and advice.</p> <p><u>TEST CASE SCENARIO</u></p> <p>1.0 Functionality Assessed</p> <p>Design/build analytical module(s) that enable REP users to extract, compile and visually map regulatory requirements and the level of regulatory burden for identified industry or sectors (e.g. by NAICS code), size of business (e.g., small business) or groups of stakeholders as defined by users.</p> <p>The REP solution should allow end users to compile information and visually map both the number and characteristics of FPT regulations, for a given NAICs (3-digit or more) that would yield insight on cumulative interjurisdictional regulatory burden, and the corresponding impacts on business. The REP solution will be assessed on its ability to map federal regulations along a specific segment of the agriculture sector (i.e., beef and canola) based on the given data and information provided.</p> <p>2.0 Test case requirements to be assessed</p> <p>Part A – AAFC Case</p> <ul style="list-style-type: none"> Find all federal, provincial and territorial regulations and related burden data that apply to beef and canola-oilseeds (NAICS 112110 & 111120) directly and indirectly. Import data files produced by external tools on the characteristics of documents (e.g., cost to purchase) incorporated by reference into relevant regulations.
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		<ul style="list-style-type: none"> • Compile a report summarizing the total number of federal and provincial regulations that apply to the sector and requirements that apply. • Generate a charts or graph visualizing the quantity and degree of regulatory burden. • Generate an output file for above analysis for import into MS Excel. <p>NAICS code overview for context and background information: https://www.statcan.gc.ca/eng/subjects/standard/naics/2017/index</p> <p>Part B – ECCC Case</p> <ul style="list-style-type: none"> • Find all federal, provincial and territorial regulations and related burden data that apply to chemical manufacturing (NAICS 325), petroleum manufacturing (NAICS 324) and transportation equipment manufacturing (NAICS 336). Provide the ability to filter the results by jurisdiction (e.g. just ECCC regulations; just Ontario; ECCC and Ontario, BC and Alberta; etc.). • Import data files produced by external tools on the characteristics of documents (e.g., cost to purchase) incorporated by reference into relevant regulations. • Compile a report summarizing the total number of federal and provincial regulations and the requirements that apply to each sector. • Generate charts or graphs visualizing the quantity and degree of regulatory burden. • Generate an output file for above analysis for import into MS Excel. <p>3.0 Data Sources and Information</p> <p>Mandatory</p> <ul style="list-style-type: none"> • See statement of work 6.2. <p>Optional</p> <ul style="list-style-type: none"> • Cattle (beef) NAICS 112110 6 digit code: http://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getV&D&TVD=1181553&CVD=1182006&CPV=11211&CST=01012017&CLV=4&MLV=5 • Canola and other oilseed NAICS 111120 6 digit code: http://www23.statcan.gc.ca/imdb/p3VD.pl?Function=getV&D&TVD=1181553&CVD=1182718&CPV=111120&CST=01012017&CLV=5&MLV=5
<p>4. Compiling multiple sources of data related to a regulation(s)</p> <p>Compiling multiple sources of data and finding patterns in unstructured data</p>	<u>Optional</u>	<p><u>Context:</u> Advanced analytics and machine learning have an important role to play in enabling regulators to combine multiple sources of info and data to assess the effectiveness of regulations in achieving their stated objectives. Regulators currently rely on a number of websites, on-line forums, and open data forums to scan the regulatory environment and gain access to regulatory data and information both within and outside of Canada.</p> <p><u>Challenge:</u></p>

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		<p>No comprehensive platform currently exists for federal departments and agencies to house results of scans of the global regulatory environment for publicly available machine readable data and online information relevant to a Canadian regulation or regulatory issue. The absence of an analytics platform to gather and analyze information on how other comparable regulators are adopting or implementing regulations, including the characteristics and attributes of those regulations, would support the ability of regulators to pursue new interventions that meet regulatory objectives.</p> <p>Transport Canada, for example, follows regulatory developments in the US, and participates at the UN's World Forum for Harmonization of Vehicle Regulations. The Forum's website is the main tool for TC to scan the global regulatory environment for vehicle regulation information in addition to other tools (e.g. Interregs). Moreover, within the domain of road vehicle data, a number of open data sets and public information exists on autonomous vehicles or vehicle recalls. However, no analytical platform exists to combine and relate these sources of data with the characteristics and attributions of the acts or regulations to which they apply.</p> <p><u>TEST CASE SCENARIO</u></p> <p><u>Note: The functionality contained below will be assessed as a pointed rated technical criteria and is not considered mandatory for acceptance of the solution.</u></p> <p>1.0 Functionality Assessed</p> <p>Design/build analytical module(s) that combine multiple sources of information and data that would, when combined with regulatory text, yield insight into the effectiveness of regulations in achieving their stated objectives (i.e., apply machine readable text and other inputs from a variety of sources that could provide context or indicators of the impact on regulated parties, stakeholders and the public);</p> <p>The REP solution should have the capability to: 1) import foreign, provincial and territorial regulations that are available in machine-readable format and 2) import datasets that are related or relevant to a regulation(s) or results in order to allow users identify patterns in unstructured data to inform regulatory or policy interventions.</p> <p>2.0 Test case requirements to be assessed</p> <ol style="list-style-type: none"> 1. Find all federal and provincial vehicle regulations as provided in 3.0 2. Import foreign vehicle regulations as provided in 3.0 3. Import vehicle recall data as provided in 3.0. 4. Analyze trends in regulatory change and trends in vehicle recalls etc. 5. Generate an output file for above analysis for import into MS Excel. <p>3.0 Data Sources and Information</p>
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		<p>Mandatory</p> <ul style="list-style-type: none"> • See statement of work 6.2. <p>Optional</p> <ul style="list-style-type: none"> • UN World Forum for Harmonization of Vehicle Regulations (WP.29) https://www.unece.org/trans/main/wp29/introduction.html • Autonomous Vehicles and self-driving data http://bdd-data.berkeley.edu/ • Vehicle recall databases on the Open Government portal (https://open.canada.ca/data/en/dataset/1ec92326-47ef-4110-b7ca-959fab03f96d)
5.Comparative Analysis across jurisdictions	<u>Mandatory</u>	<p><u>Context:</u></p> <p>The ability to compare the characteristics and attributes of individual regulations and groups of regulations from one jurisdiction to another (e.g. federal versus provincial or foreign against federal and provincial (i.e. Canada)) is a key task and ongoing concern of regulators. Under the Cabinet Directive on Regulations, departments and agencies must examine regulations from the perspective of, among others, alignment of regulatory approaches and outcomes with key trading partners in order to reduce the regulatory burden on Canadian business, while maintaining or improving the health, safety, security, social and economic well-being of Canadians, and protecting the environment.</p> <p><u>Challenge:</u></p> <p>The stock of regulations that could be compared between federal, provincial and U.S. regulations is very large and constantly evolving. Assessing opportunities for inter-jurisdictional alignment of regulations, particularly through the lens of impacts on specific sectors of the economy and small business, could be accelerated through advanced analytics and machine learning. A summer 2018 study by Mercatus (George Washington University) created a comprehensive listing for example, of federal-provincial-territorial and U.S regulations in machine readable format (see data sources). Without a platform for comparative analysis of this data, it will be difficult for Canadian regulators to extract deeper and practical insights to inform regulatory alignment and coordination activities.</p> <p><u>TEST CASE SCENARIO</u></p> <p>1.0 Functionality Assessed</p> <p>Design and build solution with the functionality to search and identify comparable regulations that apply to user-specified parameters at: 1) federal level (across departments or agencies) and 2) cumulatively across jurisdictions (e.g., foreign, federal, and provincial/territorial);</p>

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		<p>The REP solution should, based upon an identified methodology, allow for assessment and reporting on the degree of similarity or differences between regulations through calculated of scores or measure.</p> <p>2.0 Test case requirements to be assessed</p> <ol style="list-style-type: none"> 1. Find all regulations in Canada and the U.S 2. Generate a rank order list of regulations for the Canada and U.S. that are the highest in terms of similarity of content 3. Estimate cumulative number of regulations that require a licence to operate in in Canada and the U.S. 4. Generate tables and charts or graphs summarizing results of the above analysis 5. Generate an output file for above analysis for import into MS Excel. <p>3.0 Data Sources and Information</p> <p>Mandatory</p> <ul style="list-style-type: none"> • See statement of work 6.2. <p>Optional</p> <ul style="list-style-type: none"> • Mercatus – quantgov data.
<p>6.Connecting Legislation and Regulation to Service Delivery</p> <p>Inserts and comments to acts and regulations to improve analysis and support broader regulatory design and management objectives over time.</p>	Optional	<p><u>Context:</u></p> <p>Datasets and underlying structures for acts and regulations must be designed for AI based analytics platforms so that they can be sufficiently flexible to leverage and receive human input and expert knowledge and to connect to the broader suite of regulatory design, oversight, regulatory management and service delivery activities.</p> <p><u>Challenge/Issue:</u></p> <p>Research and understanding on the application of computational linguistics and semantic analysis to legislation and regulatory text is relatively new, and understanding of practical application for regulators, legislative drafters and stakeholders will continue to evolve. Algorithms, tools and platforms for analysis of acts and regulations will need to be very flexible and designed to:</p> <ol style="list-style-type: none"> 1) receive expert input from users; 2) adjust based on verification of outputs by users; and 3) adjust key input parameters for methodologies to support research and evolving research findings. <p>Moreover, beyond design, coming into force and monitoring of acts and regulations, it is important that they support regulatory management and service delivery objectives. Studies by the New Zealand government, for example, found that machine consumable legislation that is co-developed with a variety of uses (policy analysts, legislative drafters, service designers and software developers) enables legislation, business rules, and service delivery software to be developed in parallel, ensuring consistency of application, and significantly speeding up the</p>

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		<p>service delivery to people, increases the opportunities to automate and integrate service delivery (including through the use of artificial intelligence). However, regulatory organization at a national or state level may use different tools, systems and coding structures that prevent common and consistent use of acts and regulations in machine readable format, thereby restricting the broader potential use and applications to compliance monitoring, verification and service delivery.</p> <p>A REP solution, that ingests or imports foreign, federal, provincial-territorial in machine readable process, that would be subject to an review of data architecture (meta data, labelling and constraints) could be complemented by the ability of users to engage in supervised learning to improve the efficiency of algorithms for regulatory analysis (clustering/network analysis, semantic analysis) as well as insertion of pseudo code, comments and labels to support downstream delivery and regulatory management objectives.</p> <p><u>TEST CASE SCENARIO</u></p> <p>1.0 Functionality Assessed</p> <p><u>Note: The functionality contained below will be assessed as a pointed rated technical criteria and is not considered mandatory for acceptance of the solution.</u></p> <p>Ability to insert comments, commentary or "tag" data elements identified in queries which should also facilitate building of a solution and data architecture that better responds to the needs of the user over time;</p> <p>2.0 Test case requirements to be assessed:</p> <ol style="list-style-type: none"> 1. Find Act xxx and Regulation yyyy 2. Locate provision xxx... 3. Insert the following text: fakfhksaofsohf. 4. Generate a tabular report summarizing above labelling and insertion of comments into the dataset 5. Generate an output file for the above Act and regulation in XML format <p>3.0 Data Sources and Information</p> <p>Mandatory</p> <ul style="list-style-type: none"> • See statement of work 6.2. <p>Optional</p> <ul style="list-style-type: none"> • See statement of work 6.3.
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Appendix 2 to Annex B**Categories of Work and Descriptions**

CATEGORY OF WORK	DESCRIPTION
Application/ Software Architect	<p>Responsibilities could include but are not limited to:</p> <ul style="list-style-type: none"> • Develop technical architectures, frameworks and strategies, either for an organization or for a major application area, to meet the business and application requirements • Identify the policies and requirements that drive out a particular solution • Analyze and evaluate alternative technology solutions to meet business problems • Ensures the integration of all aspects of technology solutions • Monitor industry trends to ensure that solutions fit with government and industry directions for technology • Analyze functional requirements to identify information, procedures and decision flows • Evaluate existing procedures and methods, identify and document database content, structure, and application sub-systems, and develop data dictionary • Define and document interfaces of manual to automated operations within application sub-systems, to external systems and between new and existing systems • Define input/output sources, including detailed plan for technical design phase, and obtain approval of the system proposal • Identify and document system specific standards relating to programming, documentation and testing, covering program libraries, data dictionaries, naming conventions, etc.
Programmer/ Software Developer	<p>Responsibilities could include but are not limited to:</p> <ul style="list-style-type: none"> • Develop and prepare diagrammatic plans for solution of business, scientific and technical problems by means of computer systems of significant size and complexity • Analyze the problems outlined by the systems analysts/designers in terms of such factors as style and extent of information to be transferred to and from storage units, variety of items to be processed, extent of sorting, and format of final printed results • Select and incorporate available software programs • Design detailed programs, flow charts, and diagrams indicating mathematical computation and sequence of machine operations necessary to copy and process data and print the results • Translate detailed flow charts into coded machine instructions and confer with technical personnel in planning programs • Verify accuracy and completeness of programs by preparing sample data, and testing them by means of system acceptance test runs made by operating personnel • Correct program errors by revising instructions or altering the sequence of operations • Test instructions, and assemble specifications, flow charts, diagrams, layouts, programming and operating instructions to document applications for later modification or reference

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Tester	<p>Responsibilities could include but are not limited to:</p> <ul style="list-style-type: none"> • Test planning and coordination • Supervision of testing in accordance with the plan • Management and monitoring of test plans for all levels of testing • Management of walkthroughs and reviews related to testing and implementation readiness • Status reporting • Development of test scenarios and test scripts • Establishing and maintaining source and object code libraries for a multi-platform, multi-operating system environment • Establishing software testing procedures for unit test, integration testing and regression testing with emphasis on automating the testing procedures • Establishing and operating "interoperability" testing procedures to ensure that the interaction and co-existence of various software elements, which are proposed to be distributed on the common infrastructure, conform to appropriate departmental standards (e.g. For performance, compatibility, etc.) and have no unforeseen detrimental effects on the shared infrastructure • Establishing a validation and verification capability which assumes functional and performance compliance
Web Developer	<p>Responsibilities could include but are not limited to:</p> <ul style="list-style-type: none"> • Develop and prepare diagrammatic plans for web based service delivery over the internet • Analyze the problems outlined by systems analysts/designers in terms of such factors as style and extent of information to be transferred across the internet • Select and use the best available web development tools for linking the internet based client to the departmental "back end" information delivery programs and databases • Design high-usability web pages to meet the requirement • Verify accuracy and completeness of programs by preparing sample data, and testing them by means of system acceptance test runs made by operating personnel • Correct program errors by revising instructions or altering the sequence of operations • Test instructions, and assemble specifications, flow charts, diagrams, layouts, programming and operating instructions to document applications for later modification or reference
Web Graphics Designer	<p>Responsibilities could include but are not limited to:</p> <ul style="list-style-type: none"> • Create web pages including graphic design • Develop and implement usability tests, analyses result and modify design accordingly • Develop flowcharts (web site flow maps) depicting navigation and content • Develop line drawings or block diagrams illustrating the priority of information, links, navigation and space requirements • Develop content diagrams showing the interactive connection between pages • Develop interactive prototypes showing basic form and functionality used for both usability testing and presentations
Data Conversion Specialist	<p>Responsibilities could include but are not limited to:</p> <ul style="list-style-type: none"> • Oversee all facilities of the conversion process. • Complete mapping, interfaces, mock conversion work, enhancements, actual conversion, and verify completeness and accuracy of converted data.

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	<ul style="list-style-type: none"> Establish a strong working relationship with all clients, interact effectively with all levels of client personnel, and provide conversion support. Analyze and coordinate data file conversions Work with importing files from heterogeneous platforms
Database Modeller/ Information Management Modeller	<p>Responsibilities could include but are not limited to:</p> <ul style="list-style-type: none"> The Data Architect has both strategic and tactical responsibility for developing and maintaining the Architecture and Data Models for corporate and project specific initiatives. This responsibility includes the identification of data most valuable to the department, the integration of this data, and the development of core relating data models. The resulting data models will be based on data architecture and modeling design principles and tenets Design, develop and maintain Logical Data Models Analyze proposed changes to databases from the context of the Logical Data Model. Provide technical expertise in the use and optimization of data modeling techniques to team members Provide technical assistance, guidance and direction in terms of data analysis and modeling to team members Provide assistance to project team and business users relating to data issues and data analysis concepts Participate in the development of data modeling and metadata policies and procedures Participate in data analysis as a result of new/updated requirements Apply approved changes to logical data models Comply with corporate data architectures, strategies and frameworks, including enterprise data warehouse activities Analyze and evaluate alternative data architecture solutions to meet business problems/requirements to be incorporated into the corporate data architecture Review corporate architecture strategies and directions, data requirements, and business information needs and devise data structures to support them Improve modeling efficiency through recommendations on how to better utilize current metadata repositories Comply with corporate repository metadata directions Provide input to refinement of data architectures Participate in data architecture refinement Define access strategies Construct, monitor and report on work plans and schedules
Business Analyst	<p>Responsibilities could include but are not limited to:</p> <ul style="list-style-type: none"> Develop and document statements of requirements for considered alternatives Perform business analyses of functional requirements to identify information, procedures, and decision flows Evaluate existing procedures and methods, identify and document items such as database content, structure, application subsystems Define and document interfaces of manual to automated operations within application subsystems, to external systems, and between new and existing systems Establish acceptance test criteria with client Support and use the selected departmental methodologies
Technical Writer	<p>Responsibilities could include but are not limited to:</p> <ul style="list-style-type: none"> Document help text, user manuals, technical documentation, web page content, etc

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	<ul style="list-style-type: none"> • Review documentation standards and the existing project documentation • Determine documentation requirements and makes plans for meeting them • Gather information concerning the features and functions provided by the developers • Assess the audience for the documents/manuals which are required and prepare a statement of purpose and scope for each • Develop a table of content for each document/manual and write or edit the required content • Investigate the accuracy of the information collected by making direct use of the material being documented • Prepare or coordinate the preparation of any required illustrations and diagrams • Design the layout of the documents/manuals • Use word-processing, desk-top publishing and graphics software packages to produce final camera-ready copy
Project Coordinator	<p>Responsibilities could include but are not limited to:</p> <ul style="list-style-type: none"> • Assist project management and data processing professionals, technical users and end users in project coordination and synchronization tasks • Provide administrative and technical support of a clerical nature as required to a project team • Assist in performing such tasks as maintaining project documentation and application/system libraries • Act as the first or single point of contact in a "hot-line" situation by accepting incoming calls, logging calls, attempting to resolve simple problems and following established procedures for more difficult problems • Track project change requests • Maintain and updates relevant project information in manual and/or electronic files; project information might include such things as project activity schedule, status reports, correspondence • Use computer tools, aids, system control languages on PCs, minis, or mainframes to perform work • Communicate with project management and data processing professionals, technical users and end users on administrative matters related to the project
Project Manager	<p>Responsibilities could include but are not limited to:</p> <ul style="list-style-type: none"> • Manage several Project Managers, each responsible for an element of the project and its associated project team • Manage the project during the development, implementation and operations startup by ensuring that resources are made available and that the project is developed and is fully operational within previously agreed time, cost and performance parameters • Formulate statements of problems; establishes procedures for the development and implementation of significant, new or modified project elements to solve these problems, and obtains approval thereof • Define and document the objectives for the project; determine budgetary requirements, the composition, roles and responsibilities and terms of reference for the project team • Report progress of the project on an ongoing basis and at scheduled points in the life cycle • Meets in conference with stakeholders and other project managers and states problems in a form capable of being solved • Prepare plans, charts, tables and diagrams to assist in analyzing or displaying problems; work with a variety of project management tools • Project sign-off

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Quality Assurance Specialist/Analyst	<p>Responsibilities could include but are not limited to:</p> <ul style="list-style-type: none"> • Lead development of test plans, test scripts and test data • Participate in functional and technical design reviews, perform integration/functional and system testing, and verify test results • Identify and document software defects • Participate with other project resources to resolve defects • Perform regression testing of software applications
Data Scientist	<p>Responsibilities could include but are not limited to:</p> <ul style="list-style-type: none"> • Create ETL and data transformation internal libraries; • Benchmark Machine Learning algorithms against the current state of the art; • Build a Machine Learning (ML) pipeline from data ingest through to solutions for specific use cases; • Use ETL and Big Data tools to develop an efficient and accurate data workflow; • Apply a wide variety of Machine Learning algorithms to real-world data sets; • Work closely with Researchers and AI Developers to ensure data and Machine Learning models are being used effectively; • Analyze and document ethical implications of applications of data science and ML pipelines.
Research Scientist	<p>Responsibilities could include but are not limited to:</p> <ul style="list-style-type: none"> • Conduct applied research to challenge the status quo in our industry; • Work hand-to-hand with Software Architects and Engineers using scientific programming to convert prototypes into tangible products • Collaborate with specialized Researchers to examine challenging problems; • To develop new models and optimize existing ones; • Propose innovative strategies related to consumer behaviors and requirements; • Publish original research papers, create patents and attend conferences.

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are not relevant
sont non pertinentes